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BULLETIN OF THE COURSES OFFERED DURING
THE WINTER AND SPRING QUARTERS, 1902

1

RUSH MEDICAL COLLEGE

IN AFFILIATION WITH

THE UNIVERSITY OF CHICAGO

12

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CHICAGO
The University of Chicago Press
1902

CALENDAR OF THE UNIVERSITY OF CHICAGO

THE MEETINGS OF THE BOARD OF TRUSTEES ARE HELD ON THE SECOND TUESDAY OF EACH MONTH.

1902

Jan. 1	Wednesday	New Year's Day; a holiday.
		First Term of Winter Quarter begins.
Jan. 2	Thursday	Matriculation and Registration of incoming students.
Jan. 5	Sunday	The Congregation Sermon.
Feb. 11	Tuesday	First Term of Winter Quarter ends.
Feb. 12	Wednesday	Second Term of Winter Quarter begins. Lincoln's Birthday; a holiday.
Feb. 22	Saturday	Washington's Birthday; a holiday.
Mar. 1	Friday	Last Day for receiving applications for fellowships.
Mar. 16	Sunday	Convocation Sunday.
Mar. 17	Monday	Spring Meeting of the *University Congregation.*
Mar. 18	Tuesday	Spring Meeting of the *University Convocation.* Annual Assignment of *Fellowships.*
Mar. 19	Wednesday	Quarterly Examinations.
Mar. 20	Thursday	
Mar. 21	Friday	
Mar. 21	Friday	Second Term of Winter Quarter ends.
Mar. 22–31		Quarterly Recess.
April 1	Tuesday	First Term of Spring Quarter begins. Matriculation and Registration of incoming students.
April 6	Sunday	The Congregation Sermon.
May 12	Monday	First Term of Spring Quarter ends.
May 13	Tuesday	Second Term of Spring Quarter begins.
May 30	Friday	Memorial Day; a holiday.
June 3	Tuesday	Registration of resident students for the Summer and Autumn Quarters.
June 4	Wednesday	
June 5	Thursday	
June 6	Friday	
June 12	Thursday	Quarterly Examinations.
June 13	Friday	
June 14	Saturday	
June 15	Sunday	Convocation Sunday.
June 16	Monday	Alumni Day. Summer Meeting of the *University Congregation.*
June 17	Tuesday	Summer Meeting of the *University Convocation.* Second Term of Spring Quarter ends.
June 20	Friday	Summer Examination for admission to the *Junior Colleges.*
June 21	Saturday	
June 23	Monday	
June 24	Tuesday	
June 24	Tuesday	Annual Meeting of the Board of Trustees.

BOARD OF TRUSTEES OF RUSH MEDICAL COLLEGE

DE LASKIE MILLER, *President*
FRANK B. TOBEY, *Vice President*
CHARLES L. HUTCHINSON, *Treasurer*
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J. J. GLESSNER

His Excellency RICHARD YATES, *Governor*
The Hon. WILLIAM A. NORTHCOTT, *Lieutenant-Governor*
——————————, *Speaker of the House of Representatives*
ex officio

REPRESENTING THE UNIVERSITY

WILLIAM RAINEY HARPER, Ph.D., D.D., LL.D., President
ALBION W. SMALL, Ph.D., Director of the Affiliated Work of the University

LOCATION OF RUSH MEDICAL COLLEGE

The college is situated on West Harrison street, between Hermitage avenue and Wood street, and can be reached by any of the trains of the Metropolitan Elevated Railway, the Marshfield avenue station of which is three blocks east of the college; by the Ogden avenue or Van Buren street Electric lines, which cross Wood street two blocks north of the college; or by the Harrison street Electric Car line which runs on West Harrison street.

The Telephone number of the college is West 113.

Address correspondence to

RUSH MEDICAL COLLEGE,
CHICAGO, ILLINOIS.

LOCATION OF THE UNIVERSITY OF CHICAGO

The University is situated on the Midway Plaisance, between Ellis and Lexington Avenues, and can be reached by the Cottage Grove Avenue cable cars (from Wabash Avenue), by the Illinois Central Railroad to South Park Station, or by the Sixty-third Street electric cars from the Englewood railway stations.

A Baggage Express Company and the Western Union Telegraph Company have offices at the University.

The telephone number of the University is Oakland–426.

CALENDAR OF RUSH MEDICAL COLLEGE

	1902
Jan. 1, Wednesday	New Year's Day—a holiday. Winter Quarter begins
Feb. 12, Wednesday	Lincoln's Birthday—a holiday
Feb. 13, Thursday	Second Term, Winter Quarter begins
Feb. 22, Saturday	Washington's Birthday—a holiday
March 20, 21, and 22 Thursday, Friday, and Saturday	Quarterly Examinations
March 22, Saturday	Winter Quarter ends
March 22–31	Quarterly Recess
April 1, Tuesday	Spring Quarter begins
May 12, Monday	Second Term, Spring Quarter begins
May 30, Friday	Decoration Day—a holiday
June 12, 13, and 14 Thursday, Friday, and Saturday	Quarterly Examinations
June 16, Monday	Special Clinics for the Alumni Association; Class-Day Exercises of the Graduating Class
June 17, Tuesday	Special Clinics; Annual Business Meeting of the Alumni Association
June 18, Wednesday	
3:00 P.M.	Graduating Exercises
7:00 P.M.	Annual Reception and Dinner of the Faculty and Alumni Spring Quarter ends
June 19, Thursday	Summer Quarter begins

THE TRANSFER OF THE COURSES OF THE FRESHMAN AND SOPHOMORE YEARS TO THE UNIVERSITY OF CHICAGO

For several years the University of Chicago has offered courses suitable for students who were preparing to undertake medical work, and also in several of the subjects usually included in the first two years of a medical college curriculum. In 1899 provision was made for courses in Practical Anatomy, and under the arrangement of affiliation with Rush Medical College, the University offered last year courses corresponding to all of the work of the Freshman year of that institution, medical students being permitted to take their Freshman work at the University or at the College at their option. Beginning June 19, 1901, the University offers instruction in all of the subjects of the first two years of the medical curriculum; namely, in Anatomy, both gross and microscopic, Neurology, Embryology, Physiology, Physiological Chemistry, Inorganic, Organic, and Analytical Chemistry, Toxicology, Pathology, Bacteriology, and Pharmacology. The student who has completed this work will be prepared to enter directly upon the clinical work, that is to say, the work of the third and fourth years of the medical school. All of the work of the first two years of Rush Medical College will hereafter be offered at the University only. Students taking this work at the University will matriculate and register as students of Rush Medical College and likewise as students of the University. There will be no extra fee for such registration at the College, but the matriculation fee must be paid.

Until the beginning of the Summer Quarter, 1902, students will be admitted to the medical course who can comply with the requirements for admission to the Junior Colleges of the University of Chicago, corresponding to the requirements for admission to the Freshman year of an institution of equal rank. The necessity, however, for a broader and more thorough preparation for the study of medicine is strongly emphasized, and every student is advised to procure a liberal education, such as can be obtained only in a well equipped college or university, before taking up the study of medicine. This preparation, which should extend over at least two years of college work, should include a thorough course in Mathematics, in German and French, and in the sciences of Physics, Chemistry, and Biology. The requirements for admission to the medical course will be increased after June 19, 1902, and ultimately the Junior College certificate of the University, corresponding to the completion of the Sophomore year of a high grade college or university, will be demanded. (See p. 11.)

Attention is called to the fact that courses are offered in the departments of Arts, Literature, and Science of the University, in all the branches of a liberal education, and a medical student may take work in these branches by attendance upon additional quarters, or to a limited extent by extra work during his attendance upon the medical course. Students desiring to take work of this character should consult with the Dean of the Medical Course. Students who have completed not less than eighteen Majors of University work, corresponding to the Freshman and Sophomore years of a high grade university or college, and who have acquired a good knowledge of Physics, Chemistry, and Biology, and a reading knowledge of French and German, will be allowed to elect their work in the medical branches, subject to the restrictions imposed and to the approval of the Dean. (See p. 20, ¶ 2.) Students of this class who have not completed the work for the Bachelor's degree may apply their credits in medical courses as Senior College electives for a Bachelor's degree. (See p. 18.) Not only is the medical work elective for students who are thus prepared, but the courses are so arranged that the attention of the worker may be concentrated upon single or allied subjects. For example, anticipation of the chemistry of the medical course will permit a student to devote more time to any of the more strictly medical sciences. Students of this class who have received a college degree (A.B., Ph.B., or S.B.) are permitted to exceed the usual registration of three Majors of work per quarter without the payment of extra tuition fee, and it is hoped that this will encourage such students to avail themselves of the opportunities offered for advanced work and original research.

The teaching of the fundamental medical branches in an institution of general learning is believed to constitute a distinct step in advance in medical education. The student pursuing these branches in the atmosphere of an institution devoted to purely scientific work under the instruction of men whose time is wholly devoted to teaching and investigation along their respective lines, cannot but arrive at a broader and more thorough conception of these sciences. Such a training will not only afford a better preparation for the clinical courses of the medical college and for the practice of medicine and surgery, but will enable its possessor to follow easily in paths along which medical advances promise to be made, and to apply these new discoveries in his daily work.

LABORATORIES, EQUIPMENT, AND LIBRARIES

The University affords for the work of the Medical Course the following buildings:

THE HULL BIOLOGICAL LABORATORIES

On December 14, 1895, Miss Helen Culver, of the city of Chicago, presented the University of Chicago with property valued at $1,000,000 — the whole gift, according to the terms of the letter of endowment, to be devoted to the increase and spread of knowledge within the field of the biological sciences. From this fund there have been erected, at the north end of the University grounds, four buildings to serve as laboratories for the Anatomical, Botanical, Physiological, and Zoölogical Sciences. Medical instruction is given in the Anatomical, Physiological, and Zoölogical Laboratories.

THE ANATOMICAL LABORATORY

The Anatomical Laboratory is 120 by 50 feet, and four stories high, exclusive of the basement and attic, and was constructed to provide for Anatomy, both gross and microscopic, including Neurology.

In the basement are special rooms for keeping frogs and similar animals at low temperatures; a bone room, a cold storage room for anatomical material, and a crematory.

The first floor is occupied by three large laboratories for microscopic work (Histology, Microscopic Anatomy, Neurology, and Pathology), and a large photographic room containing a stone pier and connected with a dark room. On the second floor there is an additional room for general class work in microscopic branches, a lecture room, and an Osteological Laboratory. Here, too, are located the laboratories of the staff in Neurology and a laboratory for advanced work and original research in Neurology. On the third and fourth floors are situated the dissecting rooms for Human Anatomy, the private laboratories for instructors and research workers, and two laboratories for the making of special preparations. In the attic there is a well-lighted operating room adjoining a large animal room; in addition several storerooms are situated here. The laboratories are well equipped for work in gross and microscopic Anatomy and in Pathology, and especial facilities are afforded for advanced work and original research.

THE PHYSIOLOGICAL LABORATORY

The Physiological Laboratory is 102 by 52 feet and four stories high, exclusive of the basement and attic. The basement contains a cold-storage room, aquarium room, an animal room, workshop, and storeroom. It is connected with the greenhouse of the laboratory. The first floor contains a general laboratory for beginners, a galvanometer room, a lecture room, and photographic room. The second floor contains a large lecture room with preparation room and storeroom, the departmental library, an optical room, two dark rooms, and a private laboratory. The third floor contains two laboratories for advanced workers in Physiology, a laboratory for beginners in Physiological Chemistry and Pharmacology, a balance room, and several smaller rooms for work in Physiological Chemistry, and Pharmacology. The fourth floor contains two rooms with cages for animals and an operating room. In addition, two laboratories for work in Physiological Chemistry and Pharmacology, a combustion room, and a room for work in gas analysis. The laboratories are well equipped both for general instruction in Physiology, Physiological Chemistry, and Pharmacology and for advanced and research work in these sciences.

THE ZOÖLOGICAL LABORATORY

The Zoölogical Laboratory is 120 by 50 feet, and four stories high, exclusive of the basement.

On the first floor are located the library of the biological departments, rooms for a synoptical museum, a large laboratory for elementary Zoölogy and a laboratory for research work in Pathology. The second floor contains one large laboratory for beginners in research, and a number of smaller laboratories for more advanced work. The third floor contains two large laboratories, one for comparative anatomy and embryology, the other for cellular biology, and a number of rooms for research. The fourth floor is devoted to the laboratories for Bacteriology, which are supplied with sterilizers, incubators, special microscopes, and other bacteriological apparatus, and are furnished with tables for microscopical work and for the usual laboratory manipulations. The basement contains one large room with glass-covered extension on the south side, designed for an aquarium, two rooms for use as aviaries, vivaria, etc., one room for palæontological material, and one for taxidermy and museum purposes.

The best optical and other apparatus demanded by zoölogical work are provided. There are series of models and charts illustrating embryological and morphological subjects, and ample facilities for keeping land and aquatic animals under favorable conditions for study.

THE KENT CHEMICAL LABORATORY

The Chemical Laboratory provided by the generosity of Mr. Sidney A. Kent is 176 by 64 feet and three stories high exclusive of the basement. An amphitheater seating 750 people forms an annex to the building. Lectures are given in rooms on the first floor. The laboratory instruction in General Inorganic and Elementary Organic Chemistry is given on the third floor in three large laboratories accommodating 300 students. Each student is given a separate desk supplied with gas and water and is furnished with all necessary chemicals and apparatus. The laboratories for analytical chemistry are on the second and third floors. The advanced work in chemistry is done in general and private laboratories on the first and second floors. There are a number of small rooms used as balance, combustion, gas-analysis, photographic rooms, etc. The Chemical Library contains full sets of the most important journals, books of reference, and other works relating to Chemistry.

THE LIBRARIES

The General Library is located on the northeast corner of the University quadrangles. The building now occupied is temporary and is to be used until such time as a permanent library building may be erected.

The General Library is for the use of students in all departments of the University. Students who have matriculated may take at one time three volumes from the General Library. These may be kept two weeks, and at the end of that time, if desired, may be renewed for two weeks.

Former students may continue the use of the library by the payment of the library fee of $2.50 per quarter.

The total number of books at present in the library is approximately 230,000.

Number of volumes in departmental libraries of departments concerned in medical instruction, January 1, 1900: Biology, including Anatomy, Neurology, Physiology, Bacteriology, Pathology, Zoölogy, Physiological Chemistry, and Pharmacology, 8,353; Chemistry 1,813, Physics 1,375.

All the branch and departmental libraries are catalogued and classified. Most of the collections in the General Library are now permanently arranged.

Liberal appropriations have been made this year to each of the departments giving courses in medicine for the purchase of additions to the libraries dealing especially with the subjects concerned. A further annual appropriation has been granted to each department which will permit of the supply of all the important current scientific medical journals and reviews and the purchase of monographs as they appear from month to month.

The students of the University are permitted to use the books and periodicals in the Newberry Library and in the Crerar Library, both of which contain a large number of medical and general scientific works.

The Public Library of Chicago is also available to medical students for general reading.

BUILDINGS, EQUIPMENT, AND HOSPITAL FACILITIES AT RUSH MEDICAL COLLEGE

The Clinical Building, situated upon the corner of West Harrison and Wood streets, is 60 by 80 feet, and four stories in height. The first floor is occupied by the college library and reading-room. On the second floor are situated the offices of the college, the lower amphitheater, seating 400, and clinical waiting rooms. The third floor contains the upper amphitheater, seating 530 persons, a large surgical examining and dressing room, five clinical examining rooms, and a waiting-room for patients. The fourth floor is occupied in part by the upper amphitheater, and in part by the laboratory for surgical and orthopedic appliances and bandaging.

Senn Hall, now about completed, through the munificence of Professor Senn and other members of the Faculty, adjoins the Clinical Building on the east. It covers a ground space of 40 by 90 feet, is seven stories in height (including the basement), and of absolutely fire-proof construction. The basement and first three floors, affording over 10,000 square feet of floor space, will be devoted to the dispensary and the clinical teaching connected therewith. The fourth and fifth floors will be occupied by clinical laboratories and recitation rooms. The remaining two stories will contain two surgical and medical amphitheaters, seating about 150 each, with necessary waiting and preparation rooms.

The Laboratory Building, on the south side of Harrison street, is 100 by 45 feet in area, and six stories in height (including the basement.) The basement is occupied by storage rooms for apparatus, an animal room for the laboratory of Pathology and Bacteriology, and a cloak-room for students. Adjoining the basement is a separate building for the preparation and storage of cadavers, by the cold-storage process, with a capacity for about 200 bodies. The first and second stories are devoted to the Department of Pathology and Bacteriology, which is fully equipped with the necessary microscopes and other apparatus for advanced work in these branches. The third floor is occupied by the Department of Chemistry and Toxicology, and is supplied with all of the necessary apparatus and materials for advanced work in these branches in their relation to practical medicine. The fourth floor contains four recitation rooms and a laboratory for Pharmacy and Therapeutics, and for Physiology. The fifth floor is devoted to advanced work in practical gross Anatomy, and to Operative Surgery.

The Presbyterian Hospital, with accommodations for 250 patients, adjoins the college and is connected with it so that patients can be transferred directly from the wards to the clinical amphitheaters. In this hospital over 2,000 patients are treated annually, and it thus affords a large amount of valuable material for the clinics.

In the Cook County Hospital, which is situated opposite the college, are treated about 20,000 patients annually. In this institution are given about forty clinics a week, including all varieties of medical and surgical cases. The facilities for the study of pathology which are afforded at the Cook County Hospital are unexcelled in this country. Between 300 and 400 post-mortems are made annually in the necropsy theater by Professor Hektoen and the Associate Pathologist of the Hospital.

The Library and Reading Room, which has heretofore occupied the fourth floor in the Chicago College of Dental Surgery, will be transferred to the first floor of the clinical building, which will add to the convenience of students. The library contains about 10,000 volumes and files of all the leading medical journals in English, German, and French.

Through the courtesy of the medical attendants and managing officers of several hospitals and dispensaries within convenient distance of the College, *extra-mural* clinical courses are offered to the students of Rush, in small groups, and the clinical material available for teaching has thus been greatly augmented. Such courses are offered at the West Side Hebrew Dispensary, treating about 30,000 cases annually; at the St. Luke's Hospital, with about 2000 cases annually; at the Illinois Charitable Eye and Ear Infirmary, treating about 1,000 cases, and at the Chicago Isolation Hospital, where about 250 cases of smallpox were received during the past year.

REQUIREMENTS FOR ADMISSION

GENERAL REGULATIONS

Students are admitted to the Medical Course either as 1) *Medical Students,* or 2) as *Undergraduate Students* (candidates for a bachelor's degree, S.B., A.B., or Ph.B.).

Graduates of the University of Chicago or of other universities or colleges in good standing are admitted to the Medical Course as Medical Students; they are allowed all the privileges of the members of the Graduate Schools of the University.

In addition to students in regular standing, provision is made for the admission to the University of undergraduate students not seeking degrees. Such students are known as *Unclassified Students.*

1. *Admission as a Medical Student.*
   a) Each student must present to the Faculty certificates of good moral character, signed by at least two physicians of good standing in the state in which the applicant last resided.
   b) He must be able to comply with the requirements for admission to the Junior Colleges of the University of Chicago. These requirements are stated below on pp. 9–11. They correspond to the requirements for admission to the Freshman class of the better universities or colleges.
   c) He must matriculate and register as a student of Rush Medical College as well as of the University at the beginning of his course. Such matriculation and registration is accomplished at the University.

2. *Admission as an Undergraduate Student* (as a candidate for a bachelor's degree).
   a) The first two years' work in Medicine may be taken as the third and fourth years of the bachelor of science course upon fulfillment of

certain requirements for the degree (see p. 18) of this Bulletin.

A very considerable part of the first two years' work in Medicine may also be taken during the third and fourth years of the bachelor of arts or the bachelor of philosophy courses (see p. 18) of this Bulletin.

Students who wish to enter college and prepare to take the Medical work as part of their baccalaureate course may enter at the beginning of the Junior College Course (first college year) or at any farther stage of advancement).

Students who wish to take the Medical course as part of their baccalaureate course and desire to be admitted at once to the Medical course must secure admission to the Senior Colleges (third and fourth academic years) of the University* (see p. 18).

b) Each student must present to the Faculty certificates of good moral character signed by at least two physicians of good standing in the state in which the applicant last resided.

c) In order to comply with the rules of the Medical Examining Boards of several states a student will matriculate and register with the Dean of Rush Medical College (at the University) at the beginning of the first or second year's work in Medicine. He will continue to register, at the same time, with the Dean of the Senior Colleges until he receives a bachelor's degree.

3. *Admission as a Graduate Student.*

a) Admission to the Graduate Schools of the University is granted (1) to those who have been graduated from the colleges of the University of Chicago with the degree A.B., Ph.B., or S.B.; (2) to those holding baccalaureate degrees from other institutions of good standing.

b) Applications for admission in the case of students not graduates of the University should be accompanied by testimonials as to character and scholarship. Such testimonials should take the form of diplomas, written or printed theses, or furnish satisfactory evidence in some other form of the student's fitness for admission.

c) A Graduate Student taking the Medical Course will register with the Dean of the Graduate Schools after consultation with the Dean of Medical Students as to the Medical Courses he should elect. He must fulfill the conditions prescribed above in 1. *a*) and *c*).

d) For the conditions governing advanced standing in the Medical Course, see p. 11.

4. *Unclassified Students.*

a) Candidates for admission to the University as *Unclassified Students* (1) must be at least 21 years of age; (2) must show good reason for not entering upon a regular course; (3) *must take the entrance examinations of the departments in which they wish to work;* (4) must satisfy the Dean and the particular instructors under whom they desire to study that they are prepared to carry the courses elected.

Unclassified students conform to all regulations of the University, and, having been admitted, their continuance depends on the maintenance of a satisfactory standing.

Note.—Students entering the University for the first time should make it a point to complete all arrangements for entrance, either by correspondence or in person, ***at least two days before the opening of the quarter.***

REQUIREMENTS FOR ADMISSION TO THE MEDICAL COLLEGE

I. In General

Preparation for admission to the Medical College is expected to cover a period of four years in a secondary school (high school or academy) of high grade. The University does not, however, accept a high school or academy diploma as satisfying these requirements, but exacts specific credits for each subject. Such admission credits are reckoned in units.

A *unit* corresponds to a course of study comprising not less than 150 hours of prepared work. Two hours of laboratory work are regarded as the equivalent of one hour of prepared work. Fifteen units are required for admission to the Junior College. Some of them are definitely prescribed, viz.: **History** 1 unit, **Latin** 2 units, **Mathematics** 2½ units, **Physics** 1 unit, **Chemistry**† 1 unit, and **English** 2 units. The others are elective.

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* A student desiring to enter the course as a candidate for the S.B., A.B., or Ph.B. degrees is requested to consult pp. 18, 19 of this *Circular* and write for the *Circular of Information* of the Colleges, in which a complete statement is given of the requirements for the college degrees and of the conditions for admission to advanced standing in the colleges. He is also invited to enter into correspondence upon the subject with The Dean in the Colleges.

† Students may enter the Medical Course without entrance Chemistry, one unit, but such students will be conditioned and required to take two courses in Chemistry (1 and 2) in addition to the prescribed work of the Medical Course. The two courses may be taken in the Summer Quarter (1A and 2A) previous to the beginning of the Medical Course, or as extra work during the Medical Course, or in the Summer Quarter between the first and second years of Medicine.

When a student presents credit for these units from an affiliated, or coöperating school (see list below), such credit is allowed without further examination. If a credit be presented for work done at a school other than an affiliated or coöperating school, he is required to pass an examination conducted by the University except for work done in accredited schools of certain State Universities (see below).

Times and Places of Examinations. Examinations for admission are held four times a year at the University. (For dates see calendar, p. 3.) They are also given at the request of students or teachers at any of the regular dates, in cities outside of Chicago in which satisfactory arrangements can be made. Applications for such examinations should be made to the Dean of Affiliations at least 30 days in advance. Examinations for admission to other than the regular dates may be given only at the University, and that by special permission of the Dean, and upon the payment of a fee of not less than $10.00 nor more than $15.00 (the amount being dependent on the number of examinations taken).

Candidates for admission are not required to take all the examinations ot one time.

Full information in reference to the requirements for admission, with explicit description of the courses advised, the grouping recommended, with instruction as to the manner of preparing and presenting credits, is contained in the Circular of Information in reference to requirements for admission. Students desiring to apply for admission should write for this circular and for the blank, "Recommendation for Admission." Credits are accepted, without examination, from the affiliated and coöperating schools named in the following list:

1. *Students from Morgan Park Academy and the Affiliated and Coöperating Schools.* Students from these schools are admitted to the University upon presentation of a *subject certificate* covering each of the subjects stated above as required for admission. The affiliated and coöperating schools are named below:
2. *Affiliated Schools.* The following is the list of affiliated schools doing preparatory work: Bradley Polytechnic Institute, Peoria, Ill.; Culver Military Academy, Culver, Ind.; Frances Shimer Academy, Mt. Carroll, Ill.; South Side Academy, Harvard School, Kenwood Institute, Chicago Manual Training School, Princeton-Yale School, Dearborn Seminary, the University School for Girls, all of Chicago; Rugby School, Kenilworth, Ill.; Wayland Academy, Beaver Dam, Wis.; Elgin Academy, Elgin, Ill.; Burlington Institute, Burlington, Iowa; Brownell Hall, Omaha, Neb.
3. *Coöperating Schools.* The following is the list of Coöperating secondary schools:

The High Schools of Chicago, viz.: Austin, Calumet, Englewood, English High and Manual Training, Hyde Park, Jefferson, John Marshall, Joseph Medill, Lake, Lake View, North Division, Northwest Division, South Chicago, South Division, West Division; the University School for Boys.

Other High Schools in Illinois: Aurora (East Side), Aurora (West Side), Bloomington, Blue Island, Clyde, Elgin, Evanston Township, Freeport, Harvey, Hinsdale, Joliet, La Salle, Lyons Township, Moline, Oak Park, Ottawa Township, Peoria, Princeton, Quincy, Riverside, Rockford, Rock Island, Springfield, and Waukegan.

In California: San Francisco Girls' and Lowell High Schools.

In Colorado: Colorado Springs, Denver, District No. 1, District No. 2, and North Side, and Pueblo (Central and Centennial) High Schools.

In Georgia: Atlanta (Girls') High School.

In Indiana: Fort Wayne High School, Indianapolis High School, Indianapolis Industrial Training School, Classical School for Girls (Indianapolis), La Porte, Terre Haute, Elkhart, Logansport, South Bend, and Richmond High Schools.

In Iowa: Davenport, Des Moines (West Side), Dubuque, Keokuk, Sioux City, Clinton, Cedar Rapids, Ottumwa, Davenport, and Council Bluffs High Schools.

In Kansas: Leavenworth, Fort Scott, and Topeka High Schools.

In Kentucky: Boys' High School and Girls' High School, Louisville.

In Michigan: Michigan Military Academy (Orchard Lake), Battle Creek, Grand Rapids (Central), St. Joseph, and Benton Harbor High Schools.

In Minnesota: Duluth (Central), Minneapolis Central and East Side High Schools, and St. Mary's Hall and Shattuck School, Faribault.

In Missouri: Hosmer Hall (St. Louis), St. Louis, Kansas City, and St. Joseph High Schools, and Blees Military Academy (Macon).

In Montana: Helena High School.

In Nebraska: Omaha High School.

In Ohio: Cleveland (Central), Columbus (Central), Toledo (Central), Dayton (Steele High School), and Youngstown High Schools.

In Pennsylvania: Pittsburgh Central High School and Westtown Boarding School.

In Wisconsin: Milwaukee (S., E., and W. Side) and Racine High Schools, Milwaukee Downer College, Milwaukee, and Hillside Home School.

For the year beginning June 19, 1901, credits from the following schools, in addition to the foregoing list, will be accepted for admission to the **Medical Course** of the University: Four-year High Schools and Academies on the accredited lists of the following universities: The University of Wisconsin, the University of Michigan, the University of Minnesota, the University of Iowa, the University of Illinois, the University of Nebraska, the University of Kansas, the University of Indiana, and the University of Ohio.

I. Admission requirements to the medical work at the University of Chicago and Rush Medical College will consist, after June 19, 1902, of the admission requirements to the Junior College, and, in addition thereto, one year of college work, or in lieu thereof six majors of college work chosen from the twenty-one Majors especially recommended for students preparing to study medicine on p. 19 of this BULLETIN; from June 19, 1903, to June 19, 1904, twelve Majors of college work, of which six must have been chosen from the twenty-one Majors recommended, or in lieu thereof a total of nine Majors chosen from the twenty-one Majors recommended; after June 19, 1904, eighteen Majors of college work of which nine have been chosen from the twenty-one Majors recommended, or in lieu thereof a total of thirteen Majors chosen from the twenty-one Majors, specially recommended.

II. Students who have admission credits to the Junior College of the University of Chicago, may be admitted to the Medical Courses during the year beginning June 19, 1902, deficient in not more than six Majors of college work. In this event, the student will be expected to remove these conditions before he is allowed to register for any of the courses included in the second nine majors of work of the Medical Courses as outlined on pp. 20, 21 of this BULLETIN. In choosing courses to remove such conditions, he will make his selection entirely from the twenty-one Majors of work especially recommended to students preparing for medicine on p. 19 of this BULLETIN.

III. A student entering with deficiencies in admission requirements shall be permitted to register for three Majors of work only during his first quarter, but later, provided his work during that first quarter has been satisfactory, he may be permitted to register for three and one-half or four Majors per quarter.

See p. 19 of this BULLETIN for the two years' course of college studies recommended for students preparing to study medicine.

Attention is called to the fact that the extra credits which will be required in addition to high-school work (six Majors in 1902–3; nine Majors in 1903–4; thirteen Majors in 1904–5 and thereafter) may be secured in the Colleges of Arts, Literature, and Science of the University of Chicago by attendance upon extra quarters before entering the medical course or, in small part, by taking extra work in these colleges during the student's attendance upon the medical course. A student may qualify for admission to the medical course simply by prolonging his attendance or taking extra work in the University. Credit for such work in any other college or university of equal standing will be accepted.

ADMISSION TO ADVANCED STANDING

Applicants for admission to advanced standing in the courses for the degrees of A.B., Ph.B., or B.S., University of Chicago, should apply to the University for the Bulletin of Information of the Medical Course.

ADMISSION TO ADVANCED STANDING IN THE MEDICAL COURSE

The following students are admitted to advanced standing in the medical course:

First. Graduates of recognized Colleges of Arts or Science which require a regular attendance of four years as essential to graduation may be given credit for each major of work (or a full equivalent therefor) which corresponds to any of the work in medical courses. *A Major corresponds to sixty hours of didactic or recitation work, or one hundred and twenty hours of laboratory work,* or of lectures and laboratory work in the given proportion. Students of this class applying for advanced standing should state fully the date of beginning and ending of each session attended at a university or college, together with the name of the college or colleges attended, and a statement of all work which has been taken in any of the following branches: German, French, Chemistry, Physics, and any of the Biological branches.

Second. Graduates of reputable and regularly established colleges of dentistry, pharmacy, or veterinary medicine which require before graduation attendance upon a course extending over three or more years, and who can comply with the requirements for admission, may be given credit for any of the work of the Freshman and Sophomore years of the medical curriculum which may have been successfully completed in the institutions mentioned, on condition that they pass examination in those branches at the University.

Third. Students from other medical schools whose standards are fully equivalent to those of this institution may receive credit for time spent — estimated in months — and for any work successfully completed in such institutions which is equivalent to corresponding work in the medical course in the judgment of the head of that department. Such a student should give an explicit statement in regard to his preliminary education before beginning the study of medicine, the date of beginning and ending of each session attended in a medical college, together with name of the college and statement of the branches which he has successfully completed; the latter statement should set forth, if possible, the exact number of hours given to each branch.

Fourth. To graduates of other reputable institutions, fully recognized by the Illinois State Board of Health, and whose instruction is deemed by the faculty equal to that given at this institution, full credit will be given for the time spent in actual attendance (estimated in months) at such institution, and for such work, successfully completed therein, as may be the equivalent of courses offered at this institution in the Freshman, Sophomore, and Junior years. Every such student must remain in residence at Rush Medical College during at least three quarters, and successfully complete at least eleven majors of work, in order to be entitled to receive the degree of Doctor of Medicine. The faculty reserves the right to submit *any* student, applying for advanced standing, to examination in the work completed elsewhere, and for which he asks credit.

A student may matriculate at any time in person or by correspondence.

REQUIREMENTS FOR GRADUATION

The following are the requirements for the degree of Doctor of Medicine:

The candidate must not be less than twenty-one years of age, and must have studied medicine for four years. He must have paid all dues, must have complied with all the requirements, and must have maintained unexceptional conduct while at the College.

He must have attended twelve full quarters or an equivalent amount of time in a recognized medical school, of which at least the last three quarters must have been in this institution, and forty-five months must have elapsed between the beginning of his first course of medical lectures and the date of his graduation.

He must have completed, successfully, all of the work required, as follows:

Eighteen Majors of work in the Freshman and Sophomore years, comprising a minimum of 5 Majors in Anatomy, including gross, and microscopic Anatomy, Human Dissection (one lateral half of the human body), Neurology, and Embryology; 3½ Majors in Physiology, including Physiological Chemistry; 2 Majors in Chemistry; 1 Major in Pharmacology; 2½ Majors in Pathology, including Bacteriology; 4 Majors additional work in one or more of these departments of his choice.

Twenty-two Majors of work in the Junior and Senior years, comprising a minimum of 1½ Majors in Therapeutics and Preventive Medicine; 1 Major in Pathology; 4 Majors in Medicine; 5 Majors in Surgery; 3 Majors in Obstetrics and Gynecology; 1½ Majors in Diseases of the Chest, Throat, and Nose; ½ Major in Diseases of the Eye and Ear; ½ Major in Skin and Venereal Diseases; 5 additional Majors in any branch or branches of his choice.

He must have passed, successfully, a final examination, both written and practical, in Anatomy, Physiology, Chemistry, Pathology and Bacteriology, Pharmacology, Medicine, Surgery, Obstetrics, and in one of the following branches of his choice: Gynecology, Diseases of the Chest, Throat, and Nose, Ophthalmology and Otology, and in Diseases of the Skin and Venereal Diseases.

GENERAL INFORMATION FOR STUDENTS ENTERING THE FRESHMAN AND SOPHOMORE CLASSES OF THE MEDICAL COURSES

ROUTINE OF ENTRANCE

I. CREDENTIALS

Applications should be addressed to The University of Chicago, Chicago, Ill. When presenting himself for admission to the University, the student should bring his *card of admission credits* if he is entering a Junior College at its beginning; his *letter of dismissal* and an official statement concerning his previous work if he is entering with advanced standing from another institution; and his *diploma* if he is applying for admission to a Graduate School.

These documents should be presented at the office of the Dean of Medical Students, in the Anatomy Building, at the University. Detailed directions will be furnished in the Dean's office as to the mode of registering for courses of instruction desired.

II. MATRICULATION AND REGISTRATION.

1. Time of Registration.

a) Students entering the University *for the first time,* or resuming work after absence for a quarter, will register for the Autumn and Winter Quarters on or before the last day of September or the first and second days of October; and for the Spring and Summer Quarters on or before the last day of March or on the first day of April.

2. Order of Procedure for New Students.

New students will

a) In case they come from a secondary school, present credentials to the Dean of Medical Students and secure a card of admission credits. Those entering from colleges submit credentials to the Dean in charge of advanced standing. This may be done by correspondence. New students are urged to send their credentials to the Dean at least two days before they come to register.

b) *Matriculate* in the office of the Dean of Medical Students, where a card of instructions will be given him. Matriculation is granted on presentation of the card of admission-credits which entitle the student to enter the University. As evidence of admission the student is given a *Matriculation card.*

c) *Register,* in the same office, the courses of study desired for the ensuing quarter. For this purpose the student will be given a *Registration card* for the quarter and, after consultation with the Dean, the courses desired will be entered on this card.

d) *Pay the University fees* for the ensuing quarter. In order to do this, the student will present the *Matriculation card* and the proper *Registration card* at the office of the Registrar, Cobb Hall, Room A 1. On payment of fees the Registrar will stamp the Matriculation card and return it to the student, together with a receipt for tuition fees and for laboratory fees (if any).

Details as to fees will be found below.

The names of the students will be sent to instructors as entitled to attend classes *only after the fees have been paid,* as above specified.

FEES FOR MATRICULATION, TUITION, ETC.

1. *Matriculation Fee.*

a) The Matriculation Fee is $5.00 and is required of every student upon entrance to the University. It is payable but once.

b) A Medical student will also matriculate as a student of Rush Medical College. The fee is $5.00 and the matriculation is good for the complete medical course including the clinical years.

c) An undergraduate student, candidate for a bachelor's degree, who wishes to take the Medical Course as a part of the work for the bachelor's degree will also matriculate as a student of Rush Medical College at the beginning of the first or the second year of his work in the Medical course. The fee is $5.00 and the matriculation is good for the complete medical course including the clinical years.

Matriculation for Rush Medical College can be accomplished at the University through the Dean of Medical Students.

2. *Tuition Fee.*

a) The Tuition fee is $40.00 per quarter (including the library and incidental fee, $5.00) for regular work (3 Majors or their equivalent); there is no reduction to those taking only 2 Majors.

b) A reduction is made in case of students taking only 1 Major (or equivalent), one-half the full tuition fee being charged.

c) Undergraduates (including Unclassified students) taking more than 3 Majors, will be charged (in addition to the regular tuition fee) at the rate of $15.00 for each additional Major.

d) Physicians and Postgraduates taking only one course (one Major) are charged $20.00 per quarter; for more than one course the full tuition fee of $40.00 per quarter is charged.

e) *All tuition and laboratory fees are due and payable on or* BEFORE *the* FIRST *day of* EACH QUARTER. *All fees are payable to the Registrar, Cobb Lecture Hall, Room A1.*

Registration is not complete until all University bills are paid. Those who fail to meet this obligation within the first five days of the quarter will not be regarded as members of the University. After the fifth day, to secure membership in the University the consent of the Dean and the payment of a fee of $5.00 for late registration will be required.

3. *Laboratory Fees and Incidental Expenses.*

Students in Practical Gross Anatomy pay a fee of $5.00 for each course in dissection.

Students in Chemistry, Splanchnology, Physiological Chemistry, Pharmacology and Pathology pay a laboratory fee of $5.00 for a Major course and $2.50 for a Minor course. Students in Physiology and Bacteriology pay a laboratory fee of $3.00 for a Major course, and $1.50 for a Minor course. Students in Biology, in other courses than those already mentioned, pay $2.50 for a Major course, and $1.25 for a Minor course.

In addition to the regular laboratory fee a deposit of five dollars ($5.00) is required from each student to procure coupon tickets to cover loss and breakage in the laboratories. Unused portions will be redeemed.

All students taking courses in the Department of Physical Culture are required to provide themselves with gymnasium suits for use in the gymnasium. The cost of such a suit is about $4.00.

Each student who procures a skeleton from the Osteological Laboratory will deposit twelve dollars for the same, which sum will be refunded when the skeleton is returned uninjured; he may, however, retain the skeleton if he so desires, in exchange for the amount deposited.

4. *Combined Fee for Tuition and Laboratory Work for Medical Students.*

The total amount of laboratory fees for the required work of the medical course (see pp. 20, 21) is close to $35 a year, distributed, however, unequally in the three quarters. The total tuition fee for three quarters is one hundred and twenty dollars ($120). **Students taking the Medical course will be allowed to pay in lieu of the quarterly tuition fee and all laboratory fees a total fee of $52.50 per quarter. After June 19, 1902, $55.00 per quarter.** When this arrangement is once accepted by the student it becomes binding during the rest of his medical course. The fee will include one coupon ticket for $2.50 (*issued only once in three quarters*) to cover cost of material furnished in the laboratories.

A deposit of $5.00 is required from each student to procure coupon tickets to cover avoidable loss and breakage in the laboratories.

Medical students who matriculated at **Rush Medical College** *on or before April 1, 1901, will, in accordance with the terms in vogue at the date of such matriculation, be allowed to pay a total fee of $50.00 per quarter in lieu of the quarterly tuition fee and all laboratory fees.* When this arrangement is once accepted by the student it becomes binding during the rest of his medical course. The fee will include a coupon ticket for $2.50 (*issued only once in three quarters*) to cover cost of material furnished in the laboratories.

ROOMS, BOARD, AND GENERAL EXPENSES

Eight dormitories have thus far been erected in the quadrangles. Two of these are reserved for the students of the Divinity School and four are for women. A University House is organized in each dormitory; each House has a Head, appointed by the president of the University, and a House Committee, elected by the members; also a House Counselor, selected from the Faculties of the University by the members of the House. The membership of the House is determined by election, and each House is self-governing under the general control of the University Council.

The cost of rooms in the dormitories is from $20.00 to $57.00 per quarter of twelve weeks. This includes heat, light, and care. The rooms in Snell Hall, and all but one on each floor of Foster, Kelly, Green, and Beecher Halls, are single, and intended for occupancy by one student each, unless special arrangement otherwise is made with the Head of the House. In North Hall the rooms are single and in suites of a study and two sleeping rooms. Diagrams of the halls, showing prices of the rooms, with full particulars, will be sent by the Registrar on application.

Rooms will not be rented for a shorter period than a quarter, except in the Summer Quarter. If a student desires to surrender a room at the end of the quarter, notice to that effect must be given the Registrar three weeks prior to that date. The rooms are furnished with study table, chairs, bookcase, bedstead and mattress, bureau-commode, mirror, chamberware, and carpet rug. Rooms cannot be subrented, nor can exchange or transfer of rooms be made except by permission of the Registrar. In case of vacancies, applicants will be assigned rooms in the order of application. Each hall for women has separate dining hall and parlors. The cost of table board in these halls is $42 a quarter.

All applications for rooms, or for information concerning rooms and board within or without the quadrangles, should be made to the Registrar.

Undergraduate students not living in University Houses are not permitted to room in any building in which a family does not reside.

The following table will furnish an estimate of the annual expenses for thirty-six weeks of a medical student in the University, residing within the quadrangles:

	LOWEST	AVERAGE	LIBERAL
University bill, tuition* - -	$120 00	$120 00	$120 00
University bill, laboratory fees†	37 50	37 50	37 50
Rent and care of room -	60 00	105 00	125 00
Board - - - - - - -	90 00	126 00	225 00
Laundry - - - - - -	15 00	25 00	35 00
Text-books and stationery -	10 00	20 00	50 00
	$332 50	$433 50	$592 50

It is believed that students who find it necessary to reduce expenses below the lowest of these estimates can do so. Rooms outside the quadrangles, furnished, with heat, light, and care, may be obtained at from $1.00 a week upwards, the $1.00 rate being easily secured where two students room together. Many places offer room and board from $4.50 upwards. There are student clubs which secure board at cost, the rate during the past year ranging from $2.25 to $2.75 a week. A list of approved boarding places outside the quadrangles is kept on file at the room of the Y. M. C. A., Haskell Museum, and information regárding the same may there be obtained.

GENERAL INFORMATION FOR STUDENTS ENTERING THE JUNIOR AND SENIOR CLASSES AT RUSH MEDICAL COLLEGE

Attendance.—In order to be properly credited with attendance on any given term or course, it is imperative that students be present at the opening of each quarter. *No student will be registered after the fifth day of any quarter.*

Matriculation.—Each student matriculates on entering the College for the first time, but not for subsequent quarters.

Registration.—Each student registers at the beginning of each quarter, or earlier if desired, by the payment of the tuition fee for the quarter, and filing a registration card.

Division of Classes into Groups.—In order to facilitate the arrangement of the classes for work in small groups, each class is subdivided into groups of twelve students each, each group being designated by a letter. Students will be assigned to groups in the order of registration.

A student, upon entering the College at the beginning of his first Quarter, will procure from the Registrar a blank application for admission, fill out the same carefully, and return it to the Registrar, with the matriculation fee, for which he will receive a receipt.

The student will then present himself to the Dean of students and exhibit to him the credentials for admission and for admission to advanced standing. (See Requirements for Admission to Advanced Standing, pp. 11, 12.)

The Dean will issue a card certifying admission to the proper class, and will advise respecting the courses of study to be taken.

COLLEGE FEES

Matriculation fee, five dollars, payable but once.

Tuition for each quarter, fifty-two and one half dollars (after June 19, 1902, $55.00).

A discount of five dollars is made when the fee for three successive quarters is paid in advance.

No student can be assigned to any College work until his fees are paid.

Fees are not accepted after the conclusion of the first week of any quarter.

*Medical students attending the first quarter must pay the matriculation fees, $5.00 to the University and $5.00 to Rush Medical College.

† *This item is reduced to $30.00 for Rush Medical students, who matriculated on or before April 1, 1901.*

It is intended to increase gradually the tution fees, *but a student in continuous attendance (at least two quarters each year) may pursue his whole course by paying the fees in vogue at the time of matriculation.* The annual ticket for each of the various hospitals in the city is usually five dollars. Attendance is obligatory upon the county hospital only.

DEPOSITS

A deposit of five dollars is required from each student to cover the cost of unnecessary damage in the College buildings, and of avoidable loss and breakage in the laboratories. Deductions will be made from this deposit to cover the cost of articles not returned, or of damage to college property. Each student will be charged for damage or loss for which he is individually responsible, and for his *pro rata* share of damage or loss, the responsibility for which cannot be individually located. The deposit must be made on entering the College.

Members of the graduating class may rent from the College the cap and gown worn at the commencement exercises. These articles are to be returned in good order.

PHYSICIANS FEE

Graduates of this College are admitted to all lectures upon the payment of annual fee of five dollars. Graduates of other colleges, attending the full course, will pay the fees of undergraduate students.

Special laboratory courses may be taken on the payment of a fee of twenty dollars for each *Major* course.

Graduates of this or other colleges who are visiting the city for a brief time are cordially welcomed, but are requested to procure complimentary tickets at the office.

No one is authorized to make any modification of the terms regarding fees. On financial matters the Registrar, who represents the Comptroller at the College office, should be consulted.

The right is reserved to make changes in the fees, curriculum or in any other matter at any time.

SCHEDULE OF LECTURE HOURS

Schedules are issued from the College office giving the time and place of each exercise.

BOARD AND LODGING

Rooms may be obtained in the vicinity of the College at from $1.00 to $3.00 per week. Day board may be had at from $2.00 to $5.00 per week. Board and room together may be obtained at from $3.50 to $7.00 per week. A Bureau of Information is maintained at the College to which students may apply for directions as to desirable board and lodging.

Books and Instruments.—The average annual cost of the required books and instruments varies from $15.00 to $20.00.

The following table will furnish an estimate of the expenses of a student for each quarter:

	LOWEST	AVERAGE	LIBERAL
Matriculation fee (paid only the first quarter)	$ 5 00	$ 5 00	$ 5 00
Tuition for each quarter	52 50	52 50	52 50
Board and room	42 00	60 00	84 00
Laundry	5 00	7 00	12 00
Books and instruments	5 00	7 00	12 00
Incidental expenses	15 00	25 00	35 00
	$124 50	$156 50	$200 50

NOTE. — After July 1, 1904, another year will be added to the clinical and practical work of Rush Medical College, making the complete medical course, extend over five years.

CREDENTIALS FOR WORK

In order to obtain a credit slip for work of any year, each student should leave his correct home address at the College office before June 1. His credit slip will be sent to him by mail, and will show the amount of work done during the preceding year, together with any and all conditions registered against the student.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION

A branch of the Young Men's Christian Association is in active operation at Rush Medical College, and the headquarters of the West Side Association are situated within a short distance of the College buildings. Membership in this Association, with the privileges of gymnasium, bath-rooms, lecture-courses, etc., may be obtained through the Rush Medical branch at reduced prices.

Further information in regard to the Association may be obtained by application to the Rush Medical College branch of the Association.

THE QUARTER SYSTEM

The Academic year of Rush Medical College and of the University of Chicago is divided into four quarters. These are designated as the Summer, Autumn, Winter, and Spring Quarters, beginning, respectively, on or about June 19, and on the first of October, the first of January, and on the first of April, each continuing for twelve weeks. A recess of one week occurs between the end of each quarter and the beginning of the next following, excepting that there is no recess between the end of the Spring and the beginning of the Summer Quarter, and that there is a recess of one month at the close of the Summer Quarter.

THE MEDICAL CURRICULUM AS RELATED TO THE QUARTER SYSTEM

The general course of instruction in Rush Medical College requires four years of study in residence, with a minimum of attendance upon three quarters of each year. These years are designated as the Freshman, Sophomore, Junior, and Senior years, respectively.

A student may begin his college work on the first day of any quarter [see, however, p. 20, § 3, No. 3)], and may continue in residence for as many successive quarters as he desires, and will receive credit for work accomplished. Attendance during all the four quarters of the year is optional, but will not secure a time-credit of more than one year in a medical school. At least forty-five months must elapse between the date of a first matriculation and the date of graduation. Under the restrictions imposed, this system does not conflict with the existing medical practice acts, nor with the rulings of the various State Boards of Medical Examiners.

THE SUMMER QUARTER

Attention is directed to the special opportunities afforded for medical study in the Summer Quarter. The climate of Chicago is particularly well adapted to midsummer work, the clinical resources of the College and of the dispensary being then actually increased in extent and value. At this season, further, diseases may be studied which are rarely encountered during the other months of the year. Instruction in all departments is given in the Summer Quarter.

REQUIRED, ELECTIVE, AND OPTIONAL COURSES

A certain number of courses, especially in the Freshman and Sophomore years of study, are required as essential to securing credit in making up the four years' curriculum which must precede graduation. All of the courses offered in the Junior and Senior years are elective, that is, the student will be required to select from the list of elective courses a number sufficient to insure him credit for about 12 Majors each year. The term Major is fully explained in another paragraph. By this system the student can select not only his line of study but also his teachers in such special lines; and can, further, so arrange his work that in successive years he can practically include all branches taught in the College. He will be required to present, however, a minimum amount of credit in each department. See Requirements for Graduation.

The quarter system with Elective Courses is especially well adapted to the medical curriculum, and possesses the advantage of allowing each student to select a portion of his studies, and so to adapt his course to his tastes, his abilities, and his needs. This election applies for the present, however, only to the Junior and Senior years.

Optional courses, in addition to those described above, are offered to students who desire to add to the regular work as outlined in the requirements for graduation. These optional courses are designed to promote a higher scholarship and to increase facilities for work in special departments.

DEFINITION OF MAJOR AND MINOR

A Major course is defined as a didactic or recitation course, occupying five hours a week for one quarter (a total of 60 hours), or a laboratory, practical, or clinical course, occupying ten hours a week for one quarter (a total of 120 hours). A double Major occupies twice the number of hours per week for the quarter.

A Minor course is a didactic or recitation course, occupying five hours a week for one half a quarter, or six weeks; or a laboratory course, occupying ten hours per week for a similar period. The value of each course in the following departmental statements is stated as a *major* (Mj.), a *double major* (DMj.), a *minor* (M.), a *double minor* (DM.), or the decimal fraction of a *major* or *minor*.

GRADUATE COURSES IN MEDICINE FOR PHYSICIANS AND ADVANCED STUDENTS.

Special opportunities are afforded to physicians and graduate students at Rush Medical College and at the University for advanced and research work in Physics, Chemistry, Zoölogy and Embryology, Anatomy, Neurology, Physiology, Physiological Chemistry, and Pharmacology, and in Pathology and Bacteriology in Medicine, Surgery, Obstetrics, Gynecology, and in the other clinical departments. Research work may be conducted independently, or under the direction of an instructor in the department to which it belongs.

Physicians are admitted on payment of the matriculation fee, and payment of fees in proportion to the amount of work taken (see p. 16). The applicant's fitness for any course which he desires to take, should be ascertained by consultation with the head of the respective department.

Courses especially adapted to students of this class are outlined in pp. 22–41 of this Bulletin. Correspondence is invited in reference to special work other than the courses offered. It will be sufficient to address letters in reference to such course to Rush Medical College.

Students desiring to engage in work leading to the degrees of Master of Science, Master of Arts, Master of Philosophy, or to the degree of Doctor of Philosophy, are requested to write for the Circular of Information of the Graduate Schools, the University of Chicago.

THE DEGREES OF S.B., A.B., AND Ph.B.

(THE UNIVERSITY OF CHICAGO)

I. MEDICAL WORK IN THE COURSES FOR THE BACHELOR'S DEGREES

The first two years' work in medicine consists almost entirely of courses in pure science, which are open as electives to all candidates for a bachelor's degree at the University, who have had the necessary preliminary work in science.

Medical Work in the Course for Bachelor of Science.—A student who has completed the work of the Junior College of Science (two years) at the University or the second year at a college of good standing, whose credits are accepted as a full equivalent of the corresponding courses at the University, may enter the Senior College (first year) at the University and take the first two years' work in medicine as the third and fourth year of his bachelor's course, and, provided he also takes the specified required courses (three Majors in History and Philosophy) of the Senior College of Science, either in an extra quarter or as extra work during three quarters, receive the degree of S.B. on the completion of the second year's work in Medicine.

For the completion of the required work for the degree of S.B. and of the first two years in medicine, a student will need, altogether, from four to four and a half years, after entering the Junior College (Freshman year), or two to two and a quarter years after entering the Senior College (Junior year), depending on the amount of work he carries per quarter.

Science Work preparatory to the Study of Medicine for S.B. Candidates.—Candidates for the S.B. degree who intend to study medicine are strongly advised to take in their first two years at college (Freshman and Sophomore years) a large amount of work in Physics, Chemistry, and Biology, as giving the best foundation for the study of medicine (see below recommended course of study for students preparing to study medicine.)

Medical Work in the Course for the Bachelor of Arts or Philosophy.—A student who has completed the work of the Junior College of Arts or Philosophy (two years) at the University of Chicago or the Sophomore year at a college of good standing, whose credits are accepted by the University as a full equivalent of the corresponding courses, may enter the Senior College (third year) at the University and take from one to one and a half years' work in medicine as part of his bachelor's course and, provided he also takes the required work of the Senior College of Arts or Literature (four courses), receive the degree of A.B. or Ph.B. on the completion of two years' work in college. The remainder of the medical work of the first two years may be taken after graduation and with all the privileges of graduate students.

For the completion of the required work for the degree of A.B. or Ph.B. and of the first two years, work in medicine a student will need from four and a half to five years after entering the first year of the Junior College, or two and a quarter to three years after entering the Senior College (Junior year) of the University of Chicago.

Candidates for the A.B. or Ph.B. degree who intend to study medicine are strongly advised to take in their first three years at college a large amount of work in Physics, Chemistry, and Biology as giving the best foundation for the study of medicine (see below, recommended course of study for students preparing to study medicine).

For information in detail regarding the requirements for the bachelor's degrees at the University of Chicago see the Circular of Information for the Colleges.

II. COURSE OF COLLEGE STUDIES RECOMMENDED FOR STUDENTS PREPARING TO STUDY MEDICINE

1) The College studies which are recommended for students preparing to study medicine are as follows:[*] **English**, 3 Majors; **French or German**, 3 Majors (a reading knowledge in each language must be obtained from these courses and those offered for admission to College); **Mathematics**, 2 Majors; **History**, 2 Majors; **Philosophy**, 1 Major[†]; Physics, 3 Majors; Chemistry, 5 to 6 Majors: General Chemistry, Qualitative Analysis, Organic Chemistry; General Biology, 1 Major; Comparative Anatomy, 1 or 2 Majors.

These twenty-one (21) to twenty-four (24) Majors will require seven (7) to eight (8) quarters for completion. The History and Philosophy, or part of the Chemistry or Biology, may be taken during the time that the student is doing his first two years' work in medicine.

2) For students who wish to devote three years in college in preparing for medicine before entering on medical work proper, the following courses are recommended for the choice of additional electives: Greek, 3 Majors; Calculus, 1 Major; Elementary Botany, 1 Major, Course 1; General Morphology of Thallophytes, 1 Major, Course 7; Introductory Physiology, 1 Major, Course 1; Physical Chemistry, 1 Major, half-Major Courses 31 and 32 or Course 23; Quantitative Chemical Analysis, 1 Major, Course 9; Physiography, 1 Major.

THE WORK OF THE MEDICAL COURSE FOR THE FRESHMAN AND SOPHOMORE YEARS

1. *Outline of the Course.*

The course for the first two years' work in Medicine consists mainly of instruction in the fundamental medical sciences: Chemistry, Human Anatomy, Microscopic Anatomy, Histology, Neurology, and Embryology, Physiology, Physiological Chemistry, Toxicology, Pharmacology, Pathology, and Bacteriology.

2. *Amount of Work.*

The amount of work required is eighteen Majors. A *Major* (Mj.) is the unit of work and consists of five hours per week in class room throughout one quarter (12 weeks) or the equivalent amount of laboratory work a week (a total of 60 hours class-room work or the equivalent amount of laboratory work). From two to three hours of laboratory are regarded as the equivalent of one hour of class-room work.

3. *The Curriculum.*

1) Except in the case of certain students with special preparation (see below, 2) all the work of the Medical Course is prescribed for those who wish to receive credit for the first two years' work in Medicine. It consists of the following courses:[‡]

a) CHEMISTRY, 2½ Majors (1B, 2B, and 4[¶]).
Toxicology, ½ Major (Chemistry 19).[§]

b) HUMAN ANATOMY: 6½ Majors.
Histology, Minor (1A).
Osteology, Minor (3).
Introductory Anatomy, Minor (4).

Two of these three Minor courses must be taken.

Human Anatomy, including Dissecting, three Majors (4, 5, 6).
Splanchnology, ½ Major (2).
Embryology, 1 Major (Zoölogy 17).
Neurology, 1 Major (Neurology 3).

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[*] The required courses for the S.B. degree are given in **bold-faced type**; the courses recommended to be chosen as electives are given in common type.

[†] **Latin** (3 Majors) is required if only two units of Latin have been offered for admission to college.

[‡] Detailed statements concerning the courses are given below under the various departments of instruction. They should be consulted in every case *in regard to equivalent courses which may be substituted for those the numbers of which are given in the above table.*

[§] When no credit has been received for High School Chemistry on admission, two additional Majors must be taken. See footnote.

[¶] The numbers refer to the course numbers in the corresponding department.

c) PHYSIOLOGY: 6 Majors.
Physiology, 3 to 3½ Majors (12, 13, 14).
Physiological Chemistry, 1½ Majors (20).
Pharmacology, 1 Major (21).

d) PATHOLOGY: 3 Majors.
Bacteriology, 1½ Majors (1).
Pathology, 1½ Majors (3, 4).

2) An undergraduate or graduate student, who has completed substantially the course of college studies recommended as a preparation for Medicine (see p. 19), or who has taken the Freshman and Sophomore years of a university or college of good standing, and has acquired a good knowledge of physics, chemistry, and biology, and a reading knowledge of German and French, may elect his work in the medical course, in view of his special preparation for the medical branches. His selection is subject to the approval of the Dean of Medical Course, and of the head of each department in which he elects work. In choosing his work he should keep in mind that a minimum amount of work in the several branches is demanded in the course for the degree of Doctor of Medicine (see, for example, "Requirements for Graduation in Rush Medical College," p. 12 of this BULLETIN).

(3 The curriculum of instruction has been arranged in such a way as to insure for the student beginning his medical studies with any single quarter of the year, a complete annual course during any three consecutive quarters, but students are advised to enter at the beginning of the Autumn Quarter, if possible.

NOTE.—When, however, a student has not taken Chemistry in his high school or academy course, he is advised to enter the University for the Summer Quarter (beginning in 1902 on June 19, and closing August 31) in order to make up this deficiency in Chemistry.

The following table shows the arrangement of the courses for the six quarters of work comprised in the first two years of Medicine and the recommended sequence of studies. No student, however, is obliged to follow the order given, or to take full work in any quarter. Credit will be given for every course satisfactorily completed.

In the Summer Quarter, 1902, the following courses for Medical students are announced:

At the University: Courses in Histology, Splanchnology, Human Osteology, Research Work, and in Advanced Anatomy of the Eye and Ear, Nose and Throat, Pelvic Viscera and Pelvic Floor, Histogenesis, Organogenesis, and Histological Technique; Physiology; in Introductory Physiology, the Physiology of Nerves, Muscles, of Circulation and Respiration, General and Theoretical Physiology, Research Work, Physiological Chemistry and of Pharmacology, Chemistry. All the medical courses offered during the other quarters:

Embryology, Course 17; Pathology, Course 3; Bacteriology, 2 majors.

At Rush Medical College: Courses in all the clinical departments.

4. *Arrangement of Courses for Six Quarters.*

FIRST NINE MAJORS OF WORK

Chemistry† (1 B §), Major; *Histology*‡ (Anat. 1 A), Minor; *Osteology*‡ (Anat. 3), Minor; *Introductory Anatomy*‡ (0), Minor; *Human Anatomy* (4), Double Minor. The following other courses are given in this quarter, and are open to students with advanced standing and the necessary prerequisites: Bacteriology, Physiology, Analytical and Organic Chemistry, Toxicology, Human Anatomy, and advanced work in all of the departments.

WINTER, 1902

Chemistry (2 B), Major; *Splanchnology* (Anat. 2), Half Major; *Human Anatomy* (5 and 6), One and a half Majors. Other courses given: Physiology, Analytical and Organic Chemistry, Physiological Chemistry, Pathology, and advanced work in all of the departments.

SPRING 1902

Chemistry (4), Half Major; *Embryology* (Zoölogy 17), One Major; *Physiology* (12), One and a half Majors. Other courses given: Embryology, Analytical and Organic Chemistry, Pathology, and advanced work in all of the departments.

SECOND NINE MAJORS OF WORK

Bacteriology (Pathol. 1), One and a half Majors; *Physiology* (13), One Major; *Human Anatomy* (6), One Minor. Other courses given: Toxicology, Human Anatomy, Chemistry, and advanced work in all of the departments.

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†When no credit has been received for High School Chemistry on admission, two additional Majors must be taken. See footnote p. 9.

§The numbers refer to the course numbers in the departments named. The departmental announcements below should be consulted in regard to equivalent courses which may be substituted for those the numbers of which are given in the above table.

‡Two of the three Minors are to be chosen.

WINTER, 1902

Physiological Chemistry (Physiol. 20), One and a half Majors; *Pathology* (3), One-half Major; *Physiology* (14), One Major. Other courses given: Neurology, Human Anatomy, Splanchnology, Chemistry, and advanced work in all of the departments.

Students entering from Rush Medical College (the Freshman class of 1901–2) will take *Neurology* (3), in place of Physiology.

SPRING, 1902

Pathology (4), One Major; *Pharmacology* (Physiol. 21), One Major; *Neurology* (3), One Major. Other courses given: Embryology, Physiology, Human Anatomy and Chemistry, and advanced work in all of the departments.

Students entering from Rush Medical College (the Freshman class of 1900–1) will take *Embryology* (Zoölogy 17) in place of Neurology.

I. DEPARTMENT OF ANATOMY

INCLUDING COURSES IN DEPARTMENTS XXIII, ANATOMY, XXII, ZOÖLOGY, XXV, AND NEUROLOGY, THE UNIVERSITY OF CHICAGO

XXIII. THE DEPARTMEMT OF ANATOMY

OFFICERS OF INSTRUCTION

LEWELLYS F. BARKER, M.B., *Professor and Head of the Department of Anatomy*
ROBERT RUSSELL BENSLEY, M.B., *Assistant Professor of Anatomy*
ALBERT CHAUNCEY EYCLESHYMER, PH.D., *Instructor in Anatomy*
CHARLES A. PARKER, M.D., *Instructor in Anatomy*
THOMAS A. OLNEY, M.D., *Instructor in Anatomy*
PRESTON KYES, A.M., M.D., *Associate in Anatomy*
DEAN D. LEWIS, A.B., M.D., *Associate in Anatomy*
DANIEL GRAISBERRY REVELL, M.B., *Assistant in Anatomy*
BASIL H. HARVEY, M.B., *Assistant in Anatomy*
SHINKISHI HATAI, *Assistant in Anatomy* (Winter Quarter, 1902)
CHARLES INGBERT, A.B., *Assistant in Anatomy* (Winter Quarter, 1902)
WILLIAM LAURENCE TOWER, B.S., *Assistant in Anatomy* (Winter Quarter, 1902)

FELLOW

1901–1902

LOUIS NEILL TATE, A.B.

INTRODUCTORY

The general outline of the work provided for in courses is as follows: During the First Term of the Autumn Quarter, Introductory Anatomy, Osteology and Histology are studied; in the Second Term of the same quarter Histology is continued, and Systematic Anatomy, including dissection, is begun; in the Winter Quarter Splanchnology is taken up, and Systematic Anatomy, including dissection, is continued. In the Spring Quarter Neurology and Embryology are studied. The teaching is chiefly by means of laboratory work under direction; but this may be supplemented by demonstrations, lectures, and recitations. During the Summer Quarter courses are given in Histology, Splanchnology, Osteology, and Neurology. Special courses for Physicians and Advanced Students are offered in the Summer Quarter; these include courses in the Anatomy of the Eye and Ear, Nose and Throat, and Pelvic Viscera. Research work is offered every quarter.

For each Major course requiring laboratory work the laboratory fee is $2.50, excepting Practical Gross Anatomy, for which the fee is $5.00 for each part. (See p. 14.) Students will be advised at the beginning of each course as to the text-books recommended.

COURSES OF INSTRUCTION

Winter Quarter, 1902—Spring Quarter, 1902

M=Minor course=a single course for six weeks. DM=Double Minor course=a double course (two hours daily) for six weeks.
Mj=Major course=a single course for twelve weeks. DMj=Double Major course=a double course for twelve weeks.

2 **Splanchnology.**— The different organs of the body are studied. Especial effort will be made to bridge the gap between gross and microscopic anatomy by extensive use of the dissecting microscope. ½Mj or Mj. Winter Quarter.

Lectures: Thurs., Fri., 8:30.
Recitation: Sec. *a*, Mon., 8:30.
Sec. *b*, Thurs., 12:00.
Laboratory: Thurs., Fri., 9:30–11:00.

ASSISTANT PROF. BENSLEY,
DR. EYCLESHYMER, AND ASSISTANTS.

Prerequisite: *Course 1, or an equivalent.*

Offered at Rush, Winter Quarter, 1902.
Lectures: Mon., Fri., 9:00.
Laboratory: Wed., Sat., 8:00–10:00. .8Mj.

DR. PARKER.

4, 5, 6. **Systematic Human Anatomy** (*Arm and Wall of Thorax, Leg and Abdomen, Head, Neck, and Thoracic Viscera*).—The courses include lectures, recitations, and laboratory work in the dissecting-room. 3Mjs or 3DMs.

Lectures.
Winter Quarter, Mon., Wed., Fri., 12:00.

PROFESSOR BARKER, DRS. KYES, AND LEWIS.

Recitations.
Winter Quarter. Sec. *a*, Mon., 2:00.
Sec. *b*, Tues., 12:00.

DRS. BENSLEY, EYCLESHYMER, LEWIS, REVELL, HARVEY, INGBERT, AND TOWER.

Laboratory work.
Winter Quarter.
Sec. *a*, Mon.–Fri., 2:00–5:00.
Sec. *b*, Mon., Tues., 9:30–1:00; Wed.–Fri., 2:00–5:00.

Spring Quarter, First Term.

The laboratory is open for elective work.
Winter Quarter (Advanced).

Sec. *b*, Wed.–Fri., 8:30–12:00.

PROFESSOR BARKER, DR. KYES, AND ASSISTANTS.

The laboratories for dissecting are open every day from 8:30 A.M. to 5:00 P.M. (Saturdays till 1:00 P.M.), during the Second Term of the Autumn Quarter, during the Winter Quarter, and during the First Term of the Spring Quarter, and students are allowed to work extra hours in the laboratory at any time during these periods.

Courses 4, 5, and 6 will also be offered at Rush Medical College during the Winter Quarter, 1902. Hours to be announced. DM.

DRS. PARKER AND OLNEY.

7. **Neurology.** — Elementary histology and microscopic anatomy of the nervous system and the sense organs. See Department XXV, Courses 3 and 3A, etc.

8. [Zoölogy 17] **Vertebrate Embryology.**—Lectures, demonstrations, and laboratory work.

Mj or DMj. Spring Quarter.

ASSISTANT PROFESSOR LILLIE.

9. **Seminar.** — A limited number of students can by special arrangement be admitted to a seminar, in which subjects of current interest in Gross or Microscopic Anatomy will be discussed.

1–2Mjs. Winter Quarter.

Hours to be arranged.

PROFESSOR BARKER.

10. **Advanced Work and Original Research.** — Excellent opportunities are afforded for advanced work in all departments of Anatomy, and especially for original investigation in anatomical problems. Suitably trained and endowed students who have the time to undertake such work will be encouraged to do so. Those capable may work independently; a limited number can be led into such work under direction.

1–4Mjs. Winter and Spring Quarters.

PROFESSOR BARKER AND ASSISTANTS.

XXII. THE DEPARTMENT OF ZOÖLOGY

OFFICERS OF INSTRUCTION

CHARLES OTIS WHITMAN, PH.D., LL.D., *Professor and Head of the Department of Zoölogy*
CHARLES BENEDICT DAVENPORT, PH.D., *Associate Professor of Zoölogy and Embryology*
FRANK RATTRAY LILLIE, PH.D., *Assistant Professor of Zoölogy and Embryology*

ELLIOTT ROWLAND DOWNING, S.M., *Assistant in Zoölogy* (Summer Quarter, 1901).

FELLOWS
1901-1902

CHARLES CHRISTOPHER ADAMS, S.M.
EUGENE HOWARD HARPER. A.M.
WILLIAM LAURENCE TOWER, S.B.

INTRODUCTORY

In the department are offered (1) courses in General Biology and Comparative Anatomy, which form the foundation for the study of Medicine, and which are strongly recommended to college students preparing to study Medicine (see p. 19); (2) a course in Embryology, which is required of all medical students; and (3) advanced and research work for advanced special students.

The courses designed for graduate and advanced undergraduate students presuppose the work of the elementary courses, together with corresponding training in Physics and Chemistry, and ability to read German and French.

The research courses are designed for students and Fellows who are beginning original work, or who are already advanced in such work. The regular research courses, will be supplemented by the work of the Zoölogical Club and the Journal Club.

During the Summer Quarter general courses in Zoölogy will be given, at the University, at the Marine Biological Laboratory, Wood's Holl, Mass., and at the Biological Laboratory, Cold Spring Harbor, L. I. Provision will also be made for research students at these places.

COURSES OF INSTRUCTION

Winter Quarter, 1902 — Spring Quarter, 1902

M=Minor course=a single course for six weeks. DM=Double Minor course=a double course (two hours daily) for six weeks. Mj=Major course=a single course for twelve weeks. DMj=Double Major course=a double course for twelve weeks.

JUNIOR COLLEGE COURSES

5. **General Biology.** — Lectures and demonstrations dealing with topics of a general biological nature, such as: protoplasm; taxonomy; distribution and comparative anatomy in their relation to evolution; the cell theory; sex; growth; reproduction; development; the biogenetic law; evolution of the nervous system and sense organs; habit and instinct; special adaptations; variation; heredity; theories of evolution.— Open to all University students.

Mj. Winter Quarter.

Lectures: Tues.-Fri.; 4:00.

Laboratory: 2 hrs. on Friday afternoon or Saturday morning.

ASSOCIATE PROFESSOR DAVENPORT.

With the coöperation of Professors Whitman, Donaldson, Loeb, Jordan, Lillie, and others.

SENIOR COLLEGE COURSES

16A. **Comparative Anatomy of Vertebrata** (*continued.*)—Mammalian Anatomy.

M or DM. First Term; Winter Quarter.

ASSISTANT PROFESSOR LILLIE.

16B. **General and Experimental Embryology.** Mj.

M or DM. Second Term; Winter Quarter.

ASSISTANT PROFESSOR LILLIE.

Prerequisite: *Course 15.*

17. **Vertebrate Embryology.** — Lectures, demonstrations, and laboratory work. For medical and pre-medical students. Special arrangements are made for more advanced students.

Mj or DMj. Spring Quarter.

ASSISTANT PROFESSOR LILLIE.

NOTE.—Courses 15, 16, and 17 constitute a course in Vertebrate Morphology running through the year, and should be taken together.

The ADVANCED (GRADUATE) COURSES for special students are described in the announcements of the department,

XXV. THE DEPARTMENT OF NEUROLOGY

OFFICERS OF INSTRUCTION

HENRY H. DONALDSON, PH.D., *Professor and Head of the Department of Neurology*

FELLOWS

1901-1902

SHINKISHI HATAI

CHARLES INGBERT, A.B.

INTRODUCTORY

The courses here offered are intended to furnish an account of the histology, microscopic anatomy, and architecture of the Nervous System such as will be required by Students of Anatomy and those preparing for Medicine or Psychology, and also to give the opportunity both for the investigation of new problems and for a critical discussion of current work in Neurology. Course 3, together with Courses 1 and 2 in the Department of Anatomy, constitute the required work in Histology and Microscopic Anatomy for those taking the first six quarters' work in Medicine.

For each Major course requiring laboratory work the laboratory fee is $2.50.

COURSES OF INSTRUCTION

Winter Quarter, 1902—Spring Quarter, 1902

M=Minor course=a single course for six weeks. DM=Double Minor course=a double course (two hours daily) for six weeks.
Mj=Major course=a single course for twelve weeks. DMj=Double Major course=a double course for twelve weeks.

1. **The Architecture of the Central Nervous System** =Course 1A. Mj. Autumn Quarter.
Lectures: Mon., Tues., 9:30.
Laboratory: Thurs., Fri., 2:00–4:00.
PROFESSOR DONALDSON AND ASSISTANTS.

Prerequisite: *Splanchnology.*

The Growth of the Brain and its Physical Characters as related to Intelligence. Mj. Winter Quarter.
Lectures: Mon., Tues., 9:30.
Laboratory: Thurs., Fri., 2:00–4:00.
PROFESSOR DONALDSON.

Prerequisite: *Splanchnology.*

3. **Gross and Microscopic Anatomy of the Human Central Nervous System and Sense Organs.** This course forms the last portion of a year's work in Histology and Microscopic Anatomy. Mj. Winter Quarter.
Lectures: Mon., Tues., 8:30.
Recitation: Wed., 8:30.
Laboratory: Mon., 9.30–1:00; Tues., 9:30–12:00. PROFESSOR DONALDSON AND ASSISTANTS.

Prerequisite: *Splanchnology.*

3A. **Comparative Histology of the Central Nervous System and Sense Organs.**—This course is supplementary to Course 3, and offers more histological work on lower vertebrates, special attention being given to the internal and external morphology of the neurons. Mj. Spring Quarter.
Lectures: Mon., Tues., 8:30.
Laboratory: Mon., Tues., and Wed. forenoons.

Prerequisite: *Histology and Cytology.*

4, 5, 6, 7. **Seminar.**—The purposes of the Seminar are threefold:
a) Initiation into the methods of research.
b) The history of the guiding conceptions in Neurology.
c) Discussion of such literature as is too technical for presentation at a general Journal Club.

3½Mjs. Winter and Spring Quarters.
2 hrs. a week. Winter Quarter, Tues., 3:00–5:00; Spring Quarter, Thurs., 3:00–5:00.
PROFESSOR DONALDSON.

Admission to the Seminar is granted only after consultation with the head of the department.

8, 9, 10, 11. **Research Courses.—The Study of Neurological Problems.**
3½Mjs. First Term Summer Quarter; Autumn, Winter, and Spring Quarters. Laboratory work. Throughout the year.
PROFESSOR DONALDSON.

Prerequisite: *A knowledge of the main facts of Neurology.*

II. DEPARTMENT OF PHYSIOLOGY

(AT THE UNIVERSITY DEPARTMENT XXIV, INCLUDING PHYSIOLOGICAL CHEMISTRY AND PHARMACOLOGY)

OFFICERS OF INSTRUCTION

JACQUES LOEB, M.D., *Professor and Head of the Department of Physiology*
B. McPHERSON LINNELL, M.D., *Assistant Professor of Physiology*
ELIAS POTTER LYON, Ph.D., *Assistant Professor of Physiology*
ALBERT PRESCOTT MATHEWS, Ph.D., *Assistant Professor of Physiological Chemistry*
DAVID JUDSON LINGLE, Ph.D., *Instructor in Physiology*
MARTIN FISCHER, M.D., *Associate in Physiology*
WALDEMAR KOCH, Ph.D., *Assistant in Pharmacology*
RALPH WALDO WEBSTER, *Assistant in Physiological Chemistry*
ARTHUR WHITE GREELEY, A.M., *Assistant in Physiology*
CHARLES HUGH NEILSON, A.M., *Research Assistant in Physiology*

FELLOWS

1901-1902

INTRODUCTORY

The required or minimal work for medical students includes Courses 12, 13, and 14; it is distributed over three quarters, beginning in the Spring Quarter of the first year and extending over the Autumn and Winter Quarters of the second year. Included in the courses mentioned, one to two weekly conferences will be held in which students will have an opportunity to discuss the problems worked out in the laboratory. In these courses special attention will be given to the following points: (1) The student will become familiar with the traditional and classical facts and experiments in Physiology; (2) the student will acquire sufficient knowledge of the recent advances and methods of Physiology to allow him to follow intelligently and accurately the changes necessitated by their probable bearing on medicine. For example, special attention will be given to the application of Physical Chemistry to physiological problems.

For students who have finished a year's work in Physiology and wish to specialize in certain branches of scientific or practical medicine, special quarterly courses will be offered. Such courses are, for example, the Physiological Effects of Ions, Physiological Morphology, Theory of Space Sensations, Functions of the Cortex, Comparative Physiology of the Central Nervous System, the Internal Secretions, etc. These courses consist chiefly of laboratory work.

In Physiological Chemistry the required work is Course 20, and in Pharmacology Course 21. Students desiring to do advanced or research work in Physiological Chemistry or Pharmacology should consult Assistant Professor Mathews.

Any of the recent standard text-books may be used for the courses in this department.

COURSES OF INSTRUCTION

Winter Quarter, 1902—Spring Quarter, 1902

M=Minor course=a single course for six weeks. DM=Double Minor course=a double course (two hours daily) for six weeks.
Mj=Major course=a single course for twelve weeks. DMj=Double Major course=a double course for twelve weeks.

JUNIOR COLLEGE COURSE

1. **Introductory Physiology.**—The aim of this course is to familiarize the student with the structure and functions of the human body. Text-book: Martin's *Human Body*. Mj.

Winter and Spring Quarters; 8:30.

DR. LINGLE.

SENIOR COLLEGE COURSES

12. **Physiology of Nerves and Muscles, of Circulation and Respiration.** 1½ Mjs. Spring Quarter.

Lectures: Mon.–Wed., 12:00.
PROFESSOR LOEB.
Conferences: Thurs., Fri., 12:00.
ASSISTANT PROFESSOR LYON,
DR. LINGLE, AND DR. FISCHER.

Laboratory:
Sec. *a*, Mon., 8:30–12:00, Tues., 9:30–12:00.
Sec. *b*, Wed., Fri., 9:30–12:00.

ASSISTANT PROFESSOR LYON,
DR. LINGLE, AND DR. FISCHER.

Prerequisite: *XIX–1, 2; XX–1, 2.*

13. **General and Theoretical Physiology.**—Including the Physiology of Metabolism, Absorption, Secretion, and Heat. Mj.

Offered at Rush Medical College, Winter Quarter, Tues., Thurs., 8:00–10–00.

ASSISTANT PROFESSOR LINNELL.

14. **Physiology of the Central Nervous System and the Senses.** Mj. Winter Quarter.

Lectures: Mon.–Wed., 11:00.

PROFESSOR LOEB.

Laboratory: Sec. *c*, Thurs., Fri., 9:00–12:00.
Sec. *d*, Thurs., Fri., 2:00–5:00.

ASSISTANT PROFESSOR LYON, DR. LINGLE,
AND DR. FISCHER.

Also offered at Rush Medical College, Winter Quarter, Tues., Thurs., 8:00–10:00.

ASSISTANT PROFESSOR LINNELL.

15. **Special Physiology of Mammals.**—Including the repetition of classical experiments such as those on blood pressure, vaso-motor nerves, secretion, localization, with study of the literature.

Mj. Winter and Spring Quarters.
½ M. Spring Quarter; Sat. forenoon.

ASSISTANT PROFESSOR LYON
AND DR. FISCHER.

Prerequisite: *A knowledge of the main facts of Physiology.*

20. **Physiological Chemistry.**

1½ Mjs. Winter Quarter.

Lectures: Tues.–Thurs., 12:00.
Recitations: Sec. *a*, Fri., 12:00.
Sec. *b*, Wed., 2:00.

Laboratory:
Sec. *a*, Wed.–Fri., 8:30–12:00.
Sec. *b*, Mon.–Wed., 2:00–5:00.

ASSISTANT PROFESSOR MATHEWS,
DR. WEBSTER, AND ASSISTANTS.

21. **Pharmacology.** Mj. Spring Quarter.

Lectures: Mon., Tues., 11:00.
Recitations: Sec. *a*, Wed., 11:00.
Sec. *b*, Thurs., 11:00.
Laboratory:
Sec. *a*, Mon.–Wed., 8:30–10:30.
Sec. *b*, Thurs., 8:30–11:00, Fri., 8:30–12:00.

ASSISTANT PROFESSOR MATHEWS
DR. KOCH, AND ASSISTANTS.

GRADUATE COURSES

22. **Research Work in Physiological Chemistry.**

Mj. or DMj. Throughout the year.

ASSISTANT PROFESSOR MATHEWS.

23. **Research Work in Pharmacology.**

Mj. or DMj. Throughout the year.

ASSISTANT PROFESSOR MATHEWS
AND DR. KOCH.

32. **Physiology of Space Sensations.**

Mj. Winter Quarter.

Lecture: Thurs., 11:00.
Laboratory: Wed.–Fri., 2:00–5:00.

PROFESSOR LOEB.

33. **Physiological Morphology, and Theory of Tropisms.** Mj. Spring Quarter.

Lecture: Thurs., 12:00.
Laboratory: Wed.–Thurs., 2:00–5:00.

PROFESSOR LOEB.

41. **Seminar.**—Throughout the year.

Thursday, 4:00–5:00.

PROFESSOR LOEB.

42. **Research Work in Physiology.**

DMj. Throughout the year.

PROFESSOR LOEB.

III. DEPARTMENT OF CHEMISTRY, PHARMACY, AND TOXICOLOGY *†

(INCLUDING MATERIA MEDICA; AND COURSES IN DEPARTMENT XX, CHEMISTRY, AT THE UNIVERSITY OF CHICAGO)

OFFICERS OF INSTRUCTION AT RUSH MEDICAL COLLEGE

Professor WALTER S. HAINES
Assistant Professors JEROME H. SALISBURY, JACOB ALLEN PATTON
Associate RALPH W. WEBSTER
Fellow, HERBERT G. VAUGHAN

OFFICERS OF INSTRUCTION AT THE UNIVERSITY OF CHICAGO

JOHN ULRIC NEF, Ph.D., *Professor and Head of the Department of Chemistry*
ALEXANDER SMITH, Ph.D., *Associate Professor of General Chemistry*
JULIUS STIEGLITZ, Ph.D., *Assistant Professor of Chemistry*
JOHN C. HESSLER, Ph.D., *Instructor in Chemistry*
LAUDER W. JONES, Ph.D., *Associate in Chemistry*
HARRY CHALMERS BIDDLE, Ph.D., *Assistant in General Chemistry*

WALTER STANLEY HAINES, A.M., M.D., *Professor of Chemistry, Pharmacy, and Toxicology, Rush Medical College; Professorial Lecturer on Toxicology*
HERBERT NEWBY McCOY, Ph.D., *Associate Professor of Chemistry, University of Utah,* Salt Lake City, Utah

FELLOWS

1901-1902

WILLIAM McAFEE BRUCE, A.M.	JOHN WILKES SHEPHERD, A.M.
FRANCIS WILLIAM BUSHONG, A.M.	WALLACE APPLETON BEATTY, S.M., *Loewenthal Fellow*

The courses in Elementary Chemistry and Toxicology are given during the Freshman and Sophomore years at the University of Chicago; the courses in advanced Toxicology, in Medical Pharmacy and Materia Medica, in Sanitary Chemistry, in Clinical Chemistry, and in Prescription Writing, are given at Rush Medical College during the Junior and Senior Years.

Any recent standard text-books may be used for the courses in this department.

INSTRUCTION AT THE UNIVERSITY

INTRODUCTORY

In this department are offered (1) courses which are suited for providing the preparation in the science of Chemistry that is indispensable to the study and practice of Medicine; (2) courses which afford the student an opportunity for acquiring a more thorough and complete preparation for following intelligently the rapid advances in modern physiology and other medical subjects; and (3) courses which are indispensable for those who intend to assist in this advance by devoting themselves in part or exclusively to research in medical subjects, after completing their medical course.

* For courses in *Physiological Chemistry* see the Department of Physiology.

†The courses in Physics recommended to college students preparing to study medicine (see p. 19) are the following courses offered in the Department of Physics:

1. **General Physics.**—A course in General Physics in which are presented mainly from the experimental standpoint the most important principles involved in the study of mechanics, properties of liquids and gases, heat and sound. 10 hrs. a week. Mj. Each quarter. Winter and Spring Quarters; 8:30-10:30.
Mr. Hobbs and Dr. Gale.
Prerequisite: *Plane Trigonometry and Elementary (Entrance) Physics.*

General Physics.—A continuation of Course 1 covering the subjects of electricity and light.
10 hrs. a week. Mj. Repeated. Mj. Winter Quarter; 2:00-4:00.
Dr. Millikan and Mr. Hobbs.
Prerequisite: *General Physics 1.*

3. **General Physics.**—A course of lectures and demonstrations intended to complete a year's work in Junior College Physics. The most important principles of Physics not treated in Courses 1 and 2 are presented from the lecture standpoint. 5 hrs. a week. Mj. Spring Quarter; 9:30.
Drs. Mann and Millikan,
with occasional lectures by Professor Michelson.
Prerequisite: *General Physics 1 and 2.*

More advanced courses are described in the departmental announcements of the University.

REQUIREMENTS AND ELECTIVES IN CHEMISTRY

Medical students who receive entrance credit for High School Chemistry* are required to take General Chemistry, 1B and 2B, or the two Double Minor courses, 1A and 2A (Summer Quarter).

All medical students are required to take the lectures on Organic Chemistry, 4 (½ Mj.). Organic Chemistry, 17 (Mj.), Summer Quarter, or 14 and 15 (2 Mjs.) may be substituted for Course 4.

Students who are preparing for the study of medicine, and who are also candidates for a bachelor's degree in the University of Chicago, are strongly recommended to take at least three Majors more of chemistry, viz., Qualitative Analysis, 6 and 7, and the laboratory work in Organic Chemistry, 5 or 18.

Candidates for a bachelor's degree who expect to do research work in physiology or allied medical subjects may with advantage elect further courses from the following: Quantitative Analysis, 9; Organic Chemistry, 14, 15, and 16; Theoretical Chemistry, 31 and 32; or Advanced General Chemistry, 23.

COURSES OF INSTRUCTION

Winter Quarter, 1902 — Spring Quarter, 1902

M=Minor course=a single course for six weeks. DM=Double Minor course=a double course (two hours daily) for six weeks. Mj=Major course=a single course for twelve weeks. DMj=Double Major course=a double course for twelve weeks.

PRIMARILY FOR THE JUNIOR COLLEGES

1, 2, 3. **General Inorganic Chemistry.**—*Elementary Course.*

Class room 3 hrs. a week, 12:00.
Laboratory 6 hrs. a week.
3Mjs. Winter Quarter.
ASSOCIATE PROFESSOR SMITH.
Spring Quarter.
ASSISTANT PROFESSOR ———.

This is a continuous course through three quarters.

The lectures and class-room work of 1, 2, and 3 may be taken by Graduate Students without the laboratory work or laboratory fee.

The lectures and class-room work of 2A may be taken by Graduate Students without the laboratory work or laboratory fee.

Students offering entrance chemistry do more advanced laboratory work than those not offering it.

Courses 1 and 1A must be preceded by Preparatory (entrance) Physics or its equivalent, including some laboratory work.

1B, 2B. **General Inorganic Chemistry.**—*Advanced Course.* 2Mjs. Winter Quarter.

Class room 3 hrs. a week, 8:30.
Laboratory 6 hrs. a week. DR. McCOY.

Prerequisite: *Entrance Chemistry and Physics, 1 unit each.*

This is a special course designed to form a sequel to high-school chemistry. The lecture, laboratory, and recitation work are all distinct from that of Courses 1 and 2. Whenever the preparation justifies it, qualitative analysis (Course 6) may be substituted for 2B.

4, 5. **Organic Chemistry.**—*Elementary Course.*

Lectures, with experiments, 3 hrs. a week, recitation, 1 hr. a week, 8:30. ½Mj. (Course 4).
Laboratory work 6 hrs. a week. ½Mj. (Course 5).
Mj. Spring Quarter.
DR. JONES.

Prerequisite: *General Chemistry.*

The lectures may be taken without laboratory work as a ½Major.

PRIMARILY FOR THE SENIOR COLLEGES

6, 7. **Qualitative Analysis.**—Chiefly laboratory work.

2Mjs. or 2DMs. 8 or 16 hrs. a week laboratory.
2 hrs. a week class room.
Winter, and Spring Quarters.
ASSISTANT PROFESSOR STIEGLITZ AND DR. JONES.

Prerequisite: *General Chemistry.*

Courses 6, 7, form a continuous course, which may be begun in any quarter.

9. **Quantitative Analysis.**—Chiefly laboratory work in volumetric and gravimetric analysis.

Mj. or DM. 10 or 20 hrs. a week.
Winter and Spring Quarters.
ASSISTANT PROFESSOR STIEGLITZ.
(DR. JONES assisting in the Laboratory.)

Prerequisite: *Qualitative Analysis.*

14, 15, 16. **Organic Chemistry.**—The compounds of carbon, including the fatty and the aromatic series. Lectures.

2½Mjs. Winter Quarter and First Term of Spring Quarter; 12:00. PROFESSOR NEF.

Prerequisite: *General Chemistry and Qualitative Analysis.*

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*Medical students who enter without receiving credit for High School Chemistry are required to take General Chemistry, Courses 1 and 2, or 1A, 2A (2 Mjs., Summer Quarter), the lectures on Organic Chemistry, 4 (Minor), and two additional Majors, which may be selected from the courses in General Chemistry, Qualitative Analysis, or Organic Chemistry.

31, 32. **Theoretical Chemistry.**—With special reference to physical methods. 2 hrs. a week.
2Ms. Winter and Spring Quarters; 8:30.
Assistant Professor ———.
Prerequisite: *College Physics and General Chemistry.*

34. **Physico-Chemical Methods.**—Determination of specific gravity, molecular weights, etc.
Laboratory work, 5 hrs. a week for one term.
½Mj. Spring Quarter.
Assistant Professor ———.

See the Departmental Announcements for other courses in Chemistry, suitable for advanced special students in medicine.

Junior and Senior Courses (Rush)

52. **Clinical Chemistry.**—A lecture, conference, and laboratory course, dealing with the urine and other animal fluids in their relation to disease.
Lectures: First Term, Sat., 11:00; Second Term, Fri., Sat., 11:00.
Professor Haines.
Conference: Mon., 11:00.
Dr. Vaughan.
Laboratory: Second Term, Tues., Wed., Thurs., 10:00–12:00,
Spring Quarter, 1902. .8Mj.
Professor Haines, Assistant Professor Salisbury, and Dr. Vaughan.

54. **Principles of Prescribing.**—A lecture and conference course, occupying two hours weekly for one term, on the principles of prescription writing, during which the following topics are considered, viz.: general form and subdivisions of a complete prescription, apothecary and metric system of weights and measures, prescribing solids and liquids of all kinds, particular attention being given to the subject of incompatibles. Classes are limited to twenty-four. Assistant Professor Patton, and Dr. Vaughan.
Elective for Juniors and Seniors.
Winter Quarter: Each Term, Tues., Thurs., 10:00.
Spring Quarter: Second Term, Tues., Thurs., 10:00.

55. **Incompatibles in Prescribing.**—A laboratory and conference course, occupying 4 hours weekly for one term, on incompatibles in prescription writing. Assistant Professor Patton and Dr. Vaughan.
Spring Quarter: First Term, Tues., Thurs., 10:00–12:00. .6M.

56. **Pharmacology.**—A lecture and conference course on the action of the important drugs.
Assistant Prof. Patton and Dr. Vaughan.
Lectures: First Term, Mon., Wed., Fri.; Second Term, Mon., 10:00,
Conference: Sat., 10:00. .6Mj.

V. DEPARTMENT OF THERAPEUTICS AND PREVENTIVE MEDICINE

OFFICERS OF INSTRUCTION

Ingals Professor HENRY BAIRD FAVILL
Instructors JAMES C. GILL, GEORGE W. HALL
Associates ANDERS FRICK, E. B. HUTCHINSON
Assistant HUGO AD OLDENBERG

INTRODUCTORY

The department will give to the Junior class a full course in the subjects of general therapeutics together with a discussion of all therapeutic resources and a laboratory training in manipulative methods.

The instruction will be coördinated with the instruction in special therapeutics as taught in the departments of practice, to the end that repetition and conflict as far as possible may be eliminated.

The lectures and conferences will be given in conjunction with laboratory work, for the purpose of elucidating the course as it progresses.

It is desired to emphasize the physiologic and hygienic aspects of the subject, for which reason no independent course in hygiene will be given.

In immediate sequence with the Junior work, a course on Preventive Medicine will be given the Seniors in the Autumn Quarter. In this course will be discussed the origin and extension of diseases and morbid processes in relation to avoidance.

Any recent standard text-books may be used for the courses in this department.

COURSES OF INSTRUCTION

JUNIOR YEAR

Course 1. Therapeutics.—A lecture and conference course. .6Mj. Tues., Thurs., Sat., 8:00. Winter Quarter, 1902.

PROFESSOR FAVILL, DRS. GILL, HALL, AND FRICK.

Course 2. Therapeutics.—A lecture and conference, course in continuation of Course 1. .6Mj. Tues., Thurs, Sat., 8:00. Spring Quarter, 1902.

PROFESSOR FAVILL, DRS. GILL, HALL, AND FRICK.

Course 3. Practical Therapeutics.—A laboratory and practical course in Massage, Hydrotherapy, Aërotheraphy, and special manipulations, given to the class in sections. .4M. Tues., Wed., Thurs., Fri., 4:00–6:00. Winter and Spring Quarters, 1902.

Each section will be given about twenty-four hours.

Course 4. Prescription-Writing.—A didactic and conference course in the art of prescription-writing. Given to the class in small sections. Hours to be announced. .4M.

Spring Quarter, 1902. Each section twelve hours.

VI. THE DEPARTMENT OF PATHOLOGY AND BACTERIOLOGY

AT THE UNIVERSITY DEPARTMENT XXVIII

OFFICERS OF INSTRUCTION

LUDVIG HEKTOEN, M.D., *Professor of Pathology and Head of the Department of Pathology and Bacteriology*
EDWIN OAKES JORDAN, PH.D., *Associate Professor of Bacteriology*
GEORGE H. WEAVER, M.D., *Assistant Professor of Pathology*
EDWIN RAYMOND LE COUNT, M.D., *Assistant Professor of Pathology*
H. GIDEON WELLS, M.D., *Associate in Pathology*
WILLIAM BUCHANAN WHERRY, M.D., *Assistant in Bacteriology*
——————————, *Assistant in Pathology*
MAXIMILIAN HERZOG, M.D., *Professor of Pathology in the Chicago Policlinic* (Winter Quarter, 1902)

FELLOWS

MARY HEFFERAN, A.M. (Bacteriology)
LUDWIG M. LOEB, M.D. (Pathology)

INTRODUCTORY

The courses offered by the department include such as cover the required work in Pathology and Bacteriology in the curriculum of medicine, as well as advanced courses arranged for those desiring a more extended knowledge of the subjects, and for those wishing to qualify themselves for research.

At the University of Chicago the Department possesses all necessary equipment for pathologic and bacteriologic work. There is access to a good museum for teaching purposes, and to complete files of the important serial publications. Any recent standard text-book may be used for the courses in this department.

For each Major or Double Minor Course requiring laboratory work the laboratory fee is $2.50.

The Pathological Laboratory of Rush Medical College possesses about one hundred Leitz, Bausch and Lomb, and Zeiss microscopes, each with three or two objectives and substage apparatus, some fourteen microtomes, and all necessary equipment for pathologic and bacteriologic work. Abundant well-lighted desk-room with shelves and lockers is provided. The laboratory has a good museum for teaching purposes and a special departmental library containing complete files of the important pathological and bacteriological journals in the English, French, and German languages. Adjacent hospitals furnish abundant material for demonstration, advanced work, and research.

Beginning with Summer Quarter, 1901, the required courses of the first two years in Pathology and Bacteriology—about 1½ Majors in each study—will be given in the University of Chicago. The additional credit of 1 Major of Pathology required of students in the third and fourth years may be obtained by selection from the courses offered at Rush Medical College, all of which are elective.

COURSES OF INSTRUCTION

Spring Quarter 1902

Freshmen and Sophomore Courses (University)

2. **Public Hygiene.**— The application of Bacteriology to municipal hygiene. Water supply, food supply, sewage disposal, etc. Mj. Spring Quarter.

Associate Professor Jordan.

3 and 4. **General Pathology and Pathological Histology.**— A practical laboratory course is given in general pathologic histology, supplemented by experiment, by lantern demonstrations, and by the study of fresh and museum specimens, by recitations in general pathology, and by lectures. 1½ or 2Mjs. Winter and Spring Quarters.

Professor Hektoen, Dr. Wells, and Assistants.

Prerequisite : *Microscopic Anatomy and Bacteriology.*

Offered also at Rush Medical College, Winter Quarter, 1902, Mon.–Sat., 10:00–12:00. DMj.

Assistant Professor Herzog.

5A, 5B, and 5C. **Advanced Bacteriology.** Mj. Winter and Spring Quarters.

Lectures on immunity and infection are given in connection with Course 5B.

Associate Professor Jordan and Dr. Wherry.

Graduate Courses

10. **Research in Pathology** (University).— Open to a limited number of specially qualified students and graduates in medicine. Mj. or DMj. Each Quarter.

Hours arranged for each student.

Professor Hektoen and Dr. Wells.

11A, 11B, 11C. **Bacteriology** (University).— Research. Mj. or DMj. Winter, and Spring Quarters.

Associate Professor Jordan.

Junior and Senior Courses (Rush)

12. **Pathologic Anatomy and Histology.** — A laboratory, lecture, and conference course limited to fifty students. Practical instruction is given in the methods of making post-mortem examinations and of properly recording the results. The student is required to study and describe the gross appearances of diseased organs and tissues, which he then studies microscopically. Bacteriologic and chemic methods and experiments are employed whenever indicated, and the clinical relations (pathologic physiology) of the morbid conditions are emphasized.

Mj. 1:00–3:00 daily except Saturday. Winter and Spring Quarters, 1902.

Assistant Professor LeCount. and Dr. Loeb.

13. **The Common Infectious Diseases.**— The Bacteriology, Pathologic Anatomy, and Histology, as well as the important literature of some of the more frequent infectious diseases. DM.

Spring Quarter, 1902. Daily, 8:00–12:00, except Saturday.

Assistant Profs. Weaver and LeCount.

14. **The Histology and Microscopic Diagnosis of Tumors.** M.

Second Term, Winter Quarter, 1901–1902; daily, 3:00–5:00, except Saturday.

Assistant Prof. LeCount.

16. **Chemical Pathology.**—A lecture and conference course in which the chemical aspects of general and special pathology will be considered by conferences and demonstrations. ½Mj.

Spring Quarter, Mon., 4:00 p. m., Sat., 11:00 a. m.

Dr. Wells.

17. **Advanced Laboratory Work and Research in Pathology.** — Open to a limited number of specially qualified students and graduates in medicine.

Hours arranged for each student. Credit given based on time and quality of work.

Each Quarter, 1901–1902.

Professor Hektoen and Assistant Prof. LeCount.

18. **General Pathological Anatomy.**—A lecture course, with demonstrations and autopsies.

Mon., 1:00; Sat., 11:00; Thurs., 5:00.

M. Winter Quarter, 1902.

Assistant Professor LeCount.

VII. DEPARTMENT OF MEDICINE

OFFICERS OF INSTRUCTION

Professors FRANK BILLINGS, HENRY M. LYMAN, NORMAN BRIDGE, DANIEL R. BROWER, JOHN M. DODSON, JAMES B. HERRICK
Associate Professor ALFRED C. COTTON
Assistant Professors HAROLD N. MOYER, BERTRAM W. SIPPY, GEORGE H. WEAVER
Instructors S. R. SLAYMAKER, JOSEPH A. CAPPS, WILLIAM J. BUTLER, F. S. CHURCHILL, THOMAS R. CROWDER, JOSEPH L. MILLER
Associates CHARLES A. WADE, J. W. VANDERSLICE, JAMES A. HARVEY
Assistant THEO. WILD, Jr.
Clinical Attendants in the Dispensary, Drs. SALISBURY, HARVEY, MELOY, STEFFENSON, McCURDY, MERRILL
Fellow ALEXANDER F. STEVENSON

EXTRA-MURAL TEACHERS

AT THE WEST SIDE HEBREW DISPENSARY

Assistant Clinical Professor (*extra-mural*) ISAAC ABT
Assistant Clinical Professor (*extra-mural*) ROSA ENGELMAN
Assistant Clinical Professor (*extra-mural*) SYDNEY KUH
Clinical Instructor (*extra-mural*) A. W. SCHRAM
Clinical Assistant (*extra-mural*) MAY MICHAEL

AT THE CHICAGO ISOLATION HOSPITAL

Assistant Clinical Professor (*extra-mural*) HEMAN SPALDING

COURSES OF INSTRUCTION

Junior Year

Course 1.—The Anatomy, Physiology, and Hygiene of Infancy. A recitation and conference course.
Mon., Wed., Fri., 9 : 00. .6M.
First Term, Spring Quarter, 1902.
Dr. Butler.

Text-book: *The Anatomy and Physiology of Infancy and Childhood*, Cotton.

Course 1*w*.— Physical Diagnosis in Infancy and Childhood. A recitation and conference course. .4M.
Mon., Wed., 9: 00 a. m.
First Term, Winter Quarter, 1902.
Limited to 24 students.
Dr. J. W. Vanderslice.

Course 1*x*.— Physical Exploration in Infancy and Childhood. A recitation and conference course.
Mon., Wed., Fri., 10: 00–11: 00 a. m. .6M.
First Term, Spring Quarter, 1902.
Limited to 24 students.
Dr. Charles A. Wade.

Course 1*y*.— Methods of Clinical study of Infants and Children. A recitation and conference course.
Mon., Wed., 9:00–10: 00. .4M.
Second Term, Winter Quarter, 1902.
Limited to 24 students.
Dr F. S. Churchill.

Course 4.— Diseases of the Kidney, the Blood, and Vascular System; and Infectious Diseases. A recitation and conference course. .6Mj.
Mon., Wed., Fri., 9 : 00.
Winter Quarter, 1902.
Drs. Slaymaker, Miller, Meloy, Hollenbeck.

Course 5.— Diseases of the Nervous System and General Diseases. Recitation and conference course.
Mon., Wed., Fri., 9 : 00. .6Mj.
Spring Quarter, 1902.
Drs. Slaymaker, Harvey, Miller, Meloy.

Any recent standard text-book on the Practice of Medicine may be used for Courses 4, and 5.

Course 6.— A Clinical Course in the Central Free Dispensary. 1.2M.
Daily, 10 : 00–12 : 00.
In sections, one month for each section.
Winter and Spring Quarters, 1902.

Senior Year

Course 13.— Clinical Medicine. A clinical course.
Mon., Thurs., 10: 00–12: 00. .4Mj.
Winter and Spring Quarters, 1902.
Professor Billings.

Course 14.— Diseases of the Brain. A lecture and clinical course. .4M.
Wed., Fri., 9:00.
Second Term, Winter Quarter, 1902.
PROFESSOR BROWER.

Students taking this course are advised to register also for Course VII-22.

Course 16.— Diseases of the Respiratory Tract of Infancy and Childhood. A lecture and clinical course. .8M.
Tues., Thurs., 9:00 (First Term only).
Fri., 10:00-12:00 (throughout the Quarter).
Winter Quarter, 1902.
ASSOCIATE PROF. COTTON.

Course 17.— Diseases of the Kidney and Vascular System. A lecture and clinical course. .4M.
Mon., Wed., 9:00.
First Term, Spring Quarter, 1902.
ASSISTANT PROF. SIPPY.

Students taking this course are advised to register also for Course VII-21.

Course 18.—Mental Diseases. A lecture and clinical course. .4M.
Wed., Fri., 9:00.
First Term, Spring Quarter, 1902.
PROFESSOR BROWER.

Course 19.—The Nervous Diseases of Infancy and Childhood. A clinical and lecture course. .8M.
Tues., Thurs., 9:00 (First Term only).
Fri., 10:00-12:00 (throughout the Quarter).
Spring Quarter, 1902.
PROFESSOR DODSON.

Course 20.— Diseases of the Muscles and Peripheral Nerves. A lecture and clinical course. .4M.
Wed., Fri., 9:00.
Second Term, Spring Quarter, 1902.
ASSISTANT PROF. MOYER.

Course 21.—General Medicine. A clinical course at Cook County Hospital. .4Mj.
Tues., Sat., 10:00-12:00 throughout the year.
PROFESSOR HERRICK, AND
ASSISTANT PROF. SIPPY.

Course 22.—Mental and Nervous Diseases. A clinical course at Cook County Hospital. .2Mj.
Fri., 4:00-6:00 throughout the year.
Each Quarter.
PROFESSOR BROWER.

Course 23.— Beside instruction in Pneumonia and allied disorders. In lieu of the Ward Clinics heretofore announced, a course will be offered, limited to six students each term, during the Winter and Spring Quarters of 1902. .4M.
Sat., 9:00-11:00 A. M., Cook County Hospital.
ASSISTANT PROFESSOR LINNELL.

Course 24.— Laboratory Diagnosis. A laboratory course in the chemical, microscopical, and bacteriological examination of blood, urine, sputum, gastric contents, feces, secretions, exudates, etc., and their pathologic and clinical significance, especial attention being given to their bearing upon diagnosis. Each class limited to 24 men. Repeated each quarter throughout the year.
Tues., Wed., Fri., Sat., 10:00-12:00. .4Mj.
ASSISTANT PROF. WEAVER,
DRS. CROWDER, MILLER, STEVENSON.

Course 24*x*.—Advanced Haematology. A laboratory and conference course in the technique, histology, and pathology of the blood, including an exhaustive study of clinical cases of the literature of the subject. .6M.
Tues., Thurs., Sat., 8:00-10:00.
Second Term, Winter Quarter, 1902.
Limited to six students.
DR. ALEXANDER F. STEVENSON.

Prerequisites: *General Pathology and Laboratory Diagnosis.*

Course 25.—Seminar in Classics of Medical Literature.

In this course classic contributions to medical literature will be studied by means of reading, essay-writing, conference, and discussion. The number of students taking this course will be limited to twelve.

For 1902 the subjects taken up will be:
1. Laennec on Diseases of the Chest, selected chapters.
2. Addison on Diseases of the Suprarenal Capsule.
3. Report of the London Clinical Society on Myxoedema.
4. Koch on the Bacillus of Tuberculosis.
5. Selections from Trousseau's Clinical Medicine.
6. Gerhard on Typhoid Fever.

Copies of these works in English will be found in the Rush Medical College Library. .4M.
Spring Quarter. Hours to be announced.
PROFESSOR HERRICK.

Course 27*a* (*extra-mural*).—A course in Clinical Paediatrics at the West Side Hebrew Dispensary. .4M.
Mon., Thurs., 4:00-6:00 (throughout the year).
Each section one Term. Limited to eight students each term.
ASST. CLINICAL PROF. ISAAC ABT,
DR. MAY MICHAEL.

Students taking this course should register also for Course 12.

Course 27*b* (*extra-mural*).—Course in Clinical Paediatrics at West Side Hebrew Dispensary. .4M.
Wed., Sat., 2:00–4:00 (throughout the year).
Each section one Term. Limited to eight students each term. (Grouped with Course VIII–17.)
Asst. Clinical Prof. Rosa Engelman.

Course 27*c* (*extra-mural*),—Course in Clinical Neurology, West Side Hebrew Dispensary. .4M.
Wed., Sat., 4:00–6:00 (throughout the year).
Each section one Term. Limited to eight students each term. (Grouped with Course XI–8.)
Asst. Clinical Prof. Sydney Kuh.

Course 27*d* (*extra-mural*).—A Clinical Course in Variola, at the Chicago Isolation Hospital, at intervals as material is afforded. .2M.
Classes limited to ten each.
Asst. Clinical Prof. Heman Spalding.

Course 27*e* (*extra-mural*).—A Course in Clinical Medicine at St. Luke's Hospital, limited to small groups.
Wed., 4:00–6:00 (throughout the year). .2Mj.
Professor Henry B. Favill.

Students taking this course should register also for Course VIII–16.

Course 27*f*.—A clinical course in general medicine at the West Side Hebrew Dispensary. .4M.
Wed., Sat., 4:00–6:00.
Winter and Spring Quarters; each course extends over six weeks. Limited to eight students each term. Dr. Albert W. Schram.

Assistant Clinical Professor Abt holds a clinic in Diseases of Children in the arena of the Cook County Hospital every Tuesday from 4:00–6:00.

Course 27*g*.—A clinical course at St. Anthony's Hospital, corner Douglas boulevard and Nineteenth street. .6M.
Mon., Wed., 1:00–4:00. Each course one Term.
Winter and Spring Quarters.
Limited to eight students.
Drs. Laurence Ryan and
Fred. J. E. Ehrman.

Course 28.—A Course in Clinical Medicine at Cook County Hospital.
Thurs., 7:00–8:00 (throughout the year).
Assistant Prof. Sippy.

Course 29.—The Case Method of Study, A clinical and conference course, with especial reference to the methods of eliciting subjective and objective symptoms and the recording of systematic and complete case histories. .4Mj.
Wed., 10:00–12:00.
Winter Quarter.
Limited to twenty-four students.
Dr. Jos. L. Miller.

Other Clinical Courses will be offered in some of the outlying hospitals, by members of the several attending staffs, for which credit will be allowed. Detailed statement of these courses will be announced later.

VIII. DEPARTMENT OF SURGERY

OFFICERS OF INSTRUCTION

Professor NICHOLAS SENN
Professor CHRISTIAN FENGER
Professor ARTHUR DEAN BEVAN
Associate Professor WM. T. BELFIELD
Associate Professor in Dental Surgery TRUMAN W. BROPHY
Associate Clinical Professor D. W. GRAHAM
Assistant Professors ALBERT I. BOUFFLEUR, FREDERIC S. COOLIDGE, EMANUEL J. SENN
Instructors CHARLES A. PARKER, FRANK W. JAY, ERNEST J. MELLISH
Associates EMANUEL J. FRIEND, KARL DOEPFNER, DONLON, DOANE
Assistants DRS. DONLON, RYERSON, THOMPSON

AT ST. LUKE'S HOSPITAL
Assistant Clinical Professor (*extra-mural*) LEWIS L. MacARTHUR

AT THE COOK COUNTY HOSPITAL
Assistant Clinical Professor (*extra-mural*) A. E. HALSTEAD

AT THE WEST SIDE HEBREW DISPENSARY

Assistant Clinical Professor (*extra-mural*) EMANUEL FRIEND
Assistant Clinical Professor (*extra-mural*) LOUIS A. GREENSFELDER

COURSES OF INSTRUCTION

Junior Year

*2. **Principles and Practice of Surgery.**—A recitation and conference course. .6M.
Mon., Wed., Fri., 8 : 00.
Winter Quarter, 1902.
Drs. Jay, Friend, Doepfner, Donlon, Ryerson, Thompson.

*3. **Practice of Surgery.**—Recitation and conference course .6Mj.
Mon., Wed., Fri., 8 : 00.
Spring Quarter, 1902.
Drs. Donlon, Jay, Mellish, Friend.

3*b*. **Surgical Anatomy.**—Course with demonstrations and drawings of the abdomen and pelvis.
Tues., Sat., 11:00. .4Mj.
Winter Quarter, 1902.
Professor Bevan and Assistants.

3*c*. **Surgical Anatomy.**—Course with demonstrations and drawings of the head, neck, and thorax.
Tues., Sat., 11:00. .4 Mj.
Spring Quarter, 1902.
Professor Bevan and Assistants.

4. **Demonstration Course in Bandaging.**—A practical course in bandaging. .4M.
Mon., Tues., Wed., 3 : 00–5 : 00.
Six weeks for each section ; throughout each Quarter. Dr. Parker.

5. **Clinical Surgery. Central Free Dispensary.**
Daily, 1 : 00–3 : 00. M.
Throughout the year ; one month for each section.
Assistant Professor Coolidge, Drs. Friend and Doane.

Senior Year

7. **Lectures on Surgery.**—Concluding surgery of abdomen and taking up surgery of the thorax.
Mon., Wed., Fri., 8 : 00. .6Mj.
Winter Quarter, 1902.
Associate Prof. Bevan,
Including a course of Rectal surgery given by Assistant Professor E. J. Senn.

8. **Lectures on Surgery.**—Dealing with surgery of the head and neck. .6Mj.
Mon., Wed., and Fri., 8:00.
Spring Quarter, 1902.
Associate Professor Bevan.

Including a course in Orthopedic surgery given by Assistant Prof. Coolidge.

10. **A Practical Course in Operative Surgery** on the cadaver and in surgical appliances, given to the class in sections. .6M.
Tues., Thurs., Fri., 4 : 00–6 : 00.
Repeated each Term of the Winter Quarter and the First Term of the Spring Quarter.
Operative Surgery.
Assistant Prof. BoufflEur.
Surgical Appliances and Bandaging.
Dr. Parker.

11. **College Clinics.** .8Mj.
Tues., Thurs., 2 : 00–4 : 00.
Professor Senn.

Wed., 4 : 00–6 : 00 ; Sat. 2 : 00–4 : 00. Throughout the year.
Professor Fenger.

12. **Presbyterian Hospital Clinic.** .4M.
Mon., Wed., Fri., 10 : 00–12 : 00 a. m. Throughout the year.
Associate Professor Bevan.
Tues., Thurs., Sat., 10 : 12 : 00 a. m.
Associate Clinical Prof. Graham.

13. **Clinic at Cook County Hospital.** .2Mj.
Thurs., 8:00 –10 : 00 p. m. Throughout the year. Each Quarter.
Assistant Prof. BoufflEur.

15. **Dental Surgery.** — A lecture by Associate Prof. Brophy. .6M.
Won., Med., Thurs., 8 : 00.
First Term, Winter Quarter, 1902.

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*The text-books required for Courses 1, 2, and 3, are Senn's *Principles of Surgery*, Senn's *Tumors*, Senn's *Emergency and Minor Surgery*, and Von Esmarch's and Kowalzig's *Operative Surgery*, edited by Senn.

EXTRA-MURAL COURSES.

Course 16.—A course in clinical surgery at St. Luke's Hospital, classes limited to ten students. .2M.
Wed., 2:00–4:00.
Each course extends over one term (6 weeks).
ASSISTANT CLINICAL PROF. LEWIS L. MACARTHUR.

Course 17.—A course in clinical surgery at the West Side Hebrew Dispensary, classes limited to eight students. (Grouped with VII–276.) .4M.
Wed., Sat., 4:00–6:00.
Each course extends over one term.
ASSISTANT CLINICAL PROFESSOR EMANUEL FRIEND.

Course 18.—A course in clinical surgery at the Cook County Hospital, classes limited to twelve students. Throughout the year. .4M.
ASSISTANT CLINICAL PROFESSOR A. E. HALSTED.

Course 19.—A course in clinical surgery at the West Side Hebrew Dispensary. .4M.
Mon., Thurs., 4:00–6:00.
Each term throughout the year.
Limited to eight students.
DR. LOUIS A. GREENSFELDER.

IX. DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

PROFESSOR J. CLARENCE WEBSTER
ASSISTANT PROFESSOR HENRY B. STEHMAN
ASSISTANT CLINICAL PROFESSORS EFFA V. DAVIS, CHAS. E. PADDOCK
INSTRUCTORS: RUDOLPH W. HOLMES, HENRY F. LEWIS
ASSOCIATES: FREDERICK A. JEFFERSON, PALMER FINDLEY
ASSISTANT FRANK E. PIERCE
ATTENDANTS IN DISPENSARY: EFFA V. DAVIS, JULIA A. MERRILL, ELIZABETH HAY, PALMER FINDLEY, HENRY F. LEWIS, FRANK PIERCE

AT THE COOK COUNTY HOSPITAL
ASSISTANT CLINICAL PROFESSOR (*extra-mural*) E. L. MOOREHEAD

INTRODUCTORY

The subject of Obstetrics is taught by lecture and conference course in the Junior Year, a practical course in obstetric manipulations upon the manikin, and by clinical conferences in which the class, in small sections, examine patients in various institutions. During the Senior Year students are assigned to cases of labor in these institutions and at the homes of patients, being allowed to conduct the same under the direction of the assistant who accompanies them.

Gynecology is taught by lectures (didactic and clinical), microscopic and naked eye demonstrations, conference, and "touch" courses. Clinical material is furnished by the Presbyterian Hospital and the Central Free Dispensary.

Any recent standard text-book may be used for the courses in this department.

COURSES OF INSTRUCTION

OBSTETRICS

JUNIOR YEAR

Course 2.—A lecture course on the Pathology of Pregnancy, Abnormal Labor, and Obstetrical Operations. .4Mj.
Tues., Thurs., Sat., 9:00; Winter Quarter, 1902.
PROFESSOR WEBSTER.

SENIOR AND JUNIOR YEARS

Course 3.—A conference course in Obstetrics. The text-book used will be any recent standard work.
Tues., Sat., 9:00; Spring Quarter, 1902. .4Mj.
DRS. JEFFERSON, LEWIS, PIERCE.
Prerequisite: *Course 2.*

Course 4.—A course in practical Obstetrics given to the class in sections. .6M.
Mon., Wed., Fri., 1:00–3:00 and 4:00–6:00.
Tues., Thurs., Sat., 1:00–3:00.
Each course extends throughout one term.
Winter and Spring Quarters, 1901, 1902.
DRS. HOLMES, KEYES, PIERCE.

SENIOR YEAR

Course 5.—Clinical Obstetrics in the Maternity Department of the Presbyterian Hospital, Charity Hospital, Chicago Maternity, and Central Free Dispensary, under the direction of PROFESSOR WEBSTER, ASSISTANT PROFESSORS DAVIS, PADDOCK, DR. HAY, DR. MERRILL.
Throughout the year. .4M.

Course 6.— Obstetrical practice, attendance upon cases of confinement in various hospitals, and at the homes of the patients. Each student will be summoned to cases at the time of delivery, and will attend the patients during and after delivery, under supervision.

Clinical records must be kept by students and certificates obtained.

Throughout the year. .4M.

GYNECOLOGY

JUNIOR YEAR.

Course 7 —A lecture course in Gynecology.
Mon., Fri., 9:00 A.M.; Spring Quarter, 1902.
PROFESSOR WEBSTER.

SENIOR YEAR.

Course 8.— Clinical Gynecology. A college clinic and conference by PROFESSOR WEBSTER. .2Mj.
Wed., 10:00–12:00 each Quarter.

Course 9.—A conference course in Practical Gynecology. Winter Quarter. .4M.
DRS. FINDLEY AND PIERCE.

Course 10.— Dispensary clinics. A clinical demonstration and "touch" course in the Dispensary, given in sections. .4M.

Daily 1:00–3:00 each Quarter throughout the year.

Each section will work two hours daily for two weeks. DRS. FINDLEY, LEWIS, PIERCE.

Course 11.—A Microscopical course illustrating the histology and pathology of the female generative organs, both in the pregnant and non-pregnant state. .4M.
Hours to be subsequently assigned.
Winter and Spring Quarters.
DR. FINDLEY.

Course 12.—A clinical course in gynecology at the West Side Dispensary. .2M.
Tues., 4:00–6:00. Limited to three students.
DR. H. BANGA.

X. DEPARTMENT OF DISEASES OF THE CHEST, THROAT, AND NOSE

OFFICERS OF INSTRUCTION

PROFESSOR E. FLETCHER INGALS
ASSOCIATE PROFESSOR JOHN EDWIN RHODES
ASSISTANT PROFESSOR CHARLES J. WHALEN
INSTRUCTORS GEORGE W. HALL, OTTO T. FREER
ASSOCIATES J. F. DOLAMORE, GEORGE A. TORRISON, GLENN M. HAMMON, MORLEY D. BATES
ASSISTANTS J. E. RAYCROFT, N. P. COLWELL
CLINICAL ASSISTANTS HERMAN C. HILL, JOHN L. JACQUE, C. S. BRANNAN

AT THE WEST SIDE HEBREW DISPENSARY

GEORGE MORGENTHAU, ASSISTANT CLINICAL PROFESSOR (*extra-mural*)
LOUIS E. GORDON, CLINICAL ASSISTANT (*extra-mural*)

AT THE COOK COUNTY HOSPITAL

ARTHUR E. PRICE, CLINICAL ASSOCIATE (*extra-mural*)

INTRODUCTORY

The work of this department is given to members of the Junior and Senior classes, and includes lecture and recitation courses upon the diseases of the chest, throat, and nose; and clinical courses in the Amphitheater and in the Dispensary. The abundant material available enables the students to observe repeatedly, and examine individually, patients illustrating well-nigh every phase of chronic disease affecting the chest and air-passages, and to see performed the principal laryngological operations. Recitation courses enforce thorough drill in the principles and practice involved. Besides these there are practical courses in physical diagnosis and in laryngology, and a special course in intubation, in which by personal experience the students become familiar with physical signs and with the methods of examination and the use of instruments.

COURSES OF INSTRUCTION

JUNIOR YEAR

1. **Diseases of the Chest.**—A lecture and recitation course on physical diagnosis and some of the principal diseases of the chest. .6Mj.
Spring Quarter 1902; Tues., Thurs., Sat., 8:00.
ASSOCIATE PROF. RHODES, AND DR. DOLAMORE.

2. **Clinical Courses in Central Free Dispensary.** Daily except Wednesday from 1:00–3:00 throughout the year. Each section will spend two weeks in this department. .4M.
DRS. TORRISON, FREER, DOLAMORE.

3. **Physical Diagnosis.**—A theoretical and practical course.
Daily from 1:00–3:00 throughout the year.
DRS. BATES, JACQUE, AND BRANNAN.
Also a preliminary course in Laryngoscopy.
DRS. TORRISON AND HAMMON.
These courses occupy 24 hours and constitute .4M.

3a. **Physical Examination of the Healthy Chest.**— A twelve-hour course offered to sections of 12 men.
Tues. and Sat., 10:00–11:00.
Tuesday, 4:00–6:00. .2M.
DRS. HALL AND RAYCROFT.

SENIOR YEAR

4. **Diseases of the Chest, Throat, and Nose.**—A Didactic course. A continuation of Course 1 in diseases of the chest together with some of the principal diseases of the throat and nose. .6Mj.
Winter Quarter, 1902, Tues., Thurs., Sat., 8:00.
PROFESSOR INGALS, AND ASSOCIATE PROF. RHODES.

5. **College Clinic in Diseases of Chest, Throat, and Nose.** .2Mj.
Each Quarter. Wed. 2:00–4:00.
Winter Quarter. PROFESSOR INGALS.
Spring Quarter. ASSOCIATE PROF. RHODES.

6. **Diseases of the Chest.**—A hospital clinical course. .2Mj.
Wed., 8:00–9:30 throughout the year, classes limited to small groups. Each group one term.
Winter Quarter. DR. J. A. ROBISON.
Spring Quarter. DR. DOLAMORE.

7. **Diseases of the Chest, Throat, and Nose.**—A recitation course, supplementing Courses 4 and 5.
Winter Quarter, Mon., 9:00. .2Mj.
DRS. BATES AND RAYCROFT.

8. **Laryngology.**—A practical course in the Dispensary.
Daily, 1:00–3:00. Each section 2 weeks. .2M.
Winter Quarter.
DRS. FREER, JACQUE, BRANNAN.
Spring Quarter.
DRS. TORRISON, FREER, HAMMON.

9. **Physical Diagnosis.**—An advanced course for small sections, each section 2 weeks. Daily. 2:00–4:00. .2M.
ASSISTANT PROF. WHALEN, DRS. HALL AND RAYCROFT.

10. **Intubation.**—A practical course. .2M.
Winter Quarter. Daily, 1:00–3:00.
ASSISTANT PROF. WHALEN AND DR. TORRISON.

11. **Seminar.**—Selected subjects in Diseases of the Chest, Throat, and Nose.
Winter, and Spring Quarters.
PROF. INGALS, ASSOCIATE PROF. RHODES, AND DR. COLWELL.

This course will be offered only to those who have completed their Junior work in this department with an *excellent* grade.

It will consist of twenty elective clinical or didactic lectures, upon each of which the student shall present an abstract of from 300 to 500 words; also a course of reading on subjects to be assigned, and thesis upon the same.

The credit according to the quality of the work done will be .1 to 1Mj.

12. **A Clinical Course** at the West Side Hebrew Dispensary, in the Diseases of the Throat, Nose, and Ear, classes limited to eight students. Each course covers one term (six weeks). (Grouped with VII–27*a*.) .4M.
Mon., Thurs., 2:00–4:00, throughout the year.
ASSISTANT CLINICAL PROFESSOR GEORGE MORGENTHAU AND DR. L. E. GORDON.

13. **An Evening Clinical Course** at the Cook County Hospital. .2Mj.
Tues., 7:00–8:00; Winter and Spring Quarters, 1902. DR. DOLAMORE.

There will also be a clinic at the Cook County Hospital Tues., 2:00–3:00 P.M., given by DR. JOHN A. ROBISON, to which all students are invited. (See Course 6.)

14. **Lecture Course,** dealing with special diseases of the chest, throat, and nose. A continuation of Course 4. .2Mj.
Mon., 9:00–10:00; Spring Quarter.
DR. ———.

XI. DEPARTMENT OF OPHTHALMOLOGY AND OTOLOGY

OFFICERS OF INSTRUCTION

Professor FERDINAND C. HOTZ
Assistant Professors CASSIUS D. WESTCOTT, WILLIAM H. WILDER
Instructor, E. T. DICKERMAN
Assistants, CASSIUS C. ROGERS, L. E. SCHWARZ, GEORGE E. SHAMBAUGH, E. V. L. BROWN, BROWN PUSEY, HENRY R. BOETTCHER
Clinical Assistant, FRANK E. LaFORCE

AT THE WEST SIDE HEBREW DISPENSARY

Assistant Clinical Professor (*extra-mural*), ALBERT B. HALE
Clinical Assistant (*extra-mural*), B. I. STRAUSS

AT THE ILLINOIS CHARITABLE EYE AND EAR INFIRMARY

Assistant Clinical Professor (*extra-mural*) OSCAR DODD

COURSES OF INSTRUCTION

1. **A Recitation Course.**—In Diseases of the Eye and Ear. In this course the student will acquire a theoretical knowledge of the nature and treatment of the diseases of the eye and ear. These recitations will be made comprehensive by the aid of illustrations of the various diseases and the exhibition of pathological specimens. The text-books used are *May* on the Eye and *Barr* on the Ear. .6Mj.

Winter Quarter.
Assistant Prof. Westcott and Dr. Rogers.
Spring Quarter.
Assistant Prof. Wilder and Dr. Shambaugh.
8:00–9:00 a.m., Mon., Wed., Fri.

2. **Clinical Lecture Course.**—By Professor Hotz, every Friday from 2:00–4:00. Selected cases, showing the various stages of principal Diseases of the Eye and Ear, will be exhibited, their diagnostic symptoms thoroughly demonstrated, and their treatment carefully discussed. There will also be an opportunity of witnessing all the operations upon the Eye and Ear. Each quarter's work constitutes .2Mj.

3. **Course in Ophthalmoscopy.**—The student is taught the use of the ophthalmoscope for the examination of the interior of the eyeball and for retinoscopy. He is furnished artificial eyes to practice on and then allowed under the personal supervision of the instructor to examine normal and pathologic eye grounds of patients. Each student must provide himself with an ophthalmoscope. These courses are given to sections, the number in each section being limited to ten students. .4M.

At the College, Mon., Wed., 3:00–4:00; six weeks' course.
Winter Quarter.
Drs. Brown and Boettcher.
Spring Quarter.
Drs. Schwarz and Brown.

3A. At the West Side Hebrew Dispensary (*extra-mural*). .4M.
Mon., Thurs., 2:00–4:00, throughout the quarter.
Assistant Clinical Prof. Albert B. Hale.

4. **Clinical Courses on Diseases of the Eye.**—In the Central Free Dispensary, by Drs. Schwarz, Brown, Boettcher; every day from 2:00–3:00 to sections of ten students. Each section to attend two weeks. .2M.

5. **Clinical Course on Diseases of the Ear.**—In the Central Free Dispensary, by Drs. Dickerman, Rogers, Shambaugh, daily from 1:00–2:00 to sections of ten students. The attendance upon these Dispensary Clinics is particularly valuable because it affords the student the opportunity of personally examining patients and watching the progress of cases from day to day. .2M.

6. **Course in Clinical Ophthalmology.**—At the Illinois Charitable Eye and Ear Infirmary; Wed., Sat., 2:00–4:00. Assistant Prof. Wilder and Assistant Clinical Prof. Dodd.

7. **Clinical Otology.**—A clinical course in Diseases of the Ear at the Illinois Charitable Eye and Ear Infirmary; each term throughout the year. Tues., Sat., 2:00–4:00.
Classes limited to twelve students. .4M.
DR. DICKERMAN.

8. **Clinical Ophthalmology.**—At the West Side Hebrew Dispensary (*extra-mural*). Each course extends through one term (six weeks) and is limited to ten students. (Grouped with VII–27c.)
Wed., Sat., 2:00–4:00 P.M. .4Mj.
ASSISTANT CLINICAL PROF. ALBERT B. HALE AND DR. B. I. STRAUSS.

9. **Demonstration Course on the Anatomy of the Ear.**—By DR. SHAMBAUGH. Six weeks; Fri., 8:00–10:00. Class limited to ten students.

XII. DEPARTMENT OF SKIN, GENITO-URINARY, AND VENEREAL DISEASES

OFFICERS OF INSTRUCTION

PROFESSOR JAMES NEVINS HYDE
ASSOCIATE PROFESSOR FRANK HUGH MONTGOMERY
INSTRUCTOR ALFRED SCHALEK
ASSOCIATE ERNEST L. McEWEN, OLIVER S. ORMSBY
ASSISTANT WILLIAM A. QUINN

INTRODUCTORY

The work of this Department is elective and offered to members of the senior class. Instruction is given by clinical teaching both in the College amphitheater and in the Dispensary; by recitations; and by clinical, bacteriological, and pathologic demonstrations to small classes.

Instruction in this Department is supplemented by ample use of the large collection of dermatological plates, atlases, and photographs arranged in cases in proximity to the upper amphitheater: also by use of the Baretta models procured in Paris for the use of this Department. The text-books employed are Hyde and Montgomery's *On the Skin*, and Hyde and Montgomery's *Manual of Syphilis and the Venereal Diseases.*

COURSES OF INSTRUCTION

SENIOR YEAR

1. **Skin, Genito-Urinary, and Venereal Diseases.** By DRS. SCHALEK AND ORMSBY. A recitation and conference course given to the class in small sections.
.6Mj. Tues., Thurs., Sat., 9:00.
Each quarter throughout the year.
One section each quarter.

2. **Clinical Course.**—Arena Clinic, by PROFESSOR HYDE OR ASSOCIATE PROFESSOR MONTGOMERY. A clinical course on the subject of the Diseases of the Skin, of the Genito-Urinary Organs, and on Venereal Diseases. This clinic has been conducted in the College for more than twenty years, and is attended by a large number of out-patients of both sexes and all ages.
Mon., Fri., 2:00–4:00. Throughout the year.
This course occupies four hours weekly throughout the year. Each quarter's work constitutes .4Mj.

3. **Demonstration Course.**—BY ASSOCIATE PROFESSOR MONTGOMERY. A practical course of clinical, pathologic, and bacteriologic demonstrations in skin and venereal diseases, given to the class in sections of not more than ten.
Mon., Fri., 2:00–4:00.
This course occupies four hours weekly during the Winter Quarter. Each term's (six weeks) work constitutes a .4M.

4. **Genito-Urinary Diseases.**—A clinical course in diseases of the genito-urinary tract. .4Mj.
Mon., Fri., 4:00–6:00.
Throughout the year.
Limited to 48 students. Each Quarter.
ASSOCIATE PROFESSOR BELFIELD.

5. **Clinical Course in the Central Free Dispensary.** By DRS. SCHALEK, ORMSBY, AND QUINN. A clinical course given to the class in small sections in the Dermatological and Genito-Urinary Department of the Central Free Dispensary. The student is here brought in personal contact with the patients and required to examine and prescribe for them as he would in private practice. .2M.

Daily, 1:00–3:00.

In sections: each section occupies twelve hours weekly for two weeks.

6. **Histopathology and Bacteriology of the Skin.** A demonstration course including instruction and practical work in methods peculiar to the study of cutaneous pathology and bacteriology.

Tues., Fri., 4:00–6:00. Spring Quarter.

DR. ORMSBY.

Limited to eight students. Each term constitutes a .4M.

XIII. PROFESSORIAL LECTURES

Course I. Consisting of six lectures by Judge Freeman.

Wed., 1:00–2:00; Tues., Thurs., 5:00–6:00.

DR. GILL.

Second Term, Winter Quarter.

Five lectures on Life Insurance Examination will be given during the Winter Quarter by Drs. J. W. Fisher and Charles E. Albright of the Northwestern Mutual Life Insurance Co. Topics and hours to be announced.

2. **The History of Medicine.**—A lecture course by ——— ————.

Winter Quarter, 1902. Hours to be announced.

Optional course.

Lectures on subjects related to the sciences of Physics, Chemistry, and Biology, in their relation to medicine, will be given during the Winter and Spring Quarters of 1902. Detailed statement of these courses will be announced later.

A summary of the courses offered in each quarter is furnished in the Schedule at Hours furnished to each student at the College office.

The Annual Announcement for the Summer and Autumn Quarters of 1902, and the Winter and Spring Quarters, 1903, will be issued about April 1, 1902.

FELLOWSHIPS, HOSPITAL INTERNES, AND PRIZES

FELLOWSHIPS

The following Fellowships, each of the value of four hundred dollars annually, one in chemistry, two in pathology, one in materia medica and therapeutics, one in medicine, and one in surgery are awarded at each Commencement.

The Walter S. Haines Fellowship in chemistry is awarded to the member of the graduating class recognized as in every way best qualified for the position. He devotes the year succeeding his appointment to original investigation in medical chemistry under the direction of the professor of that Chair in the laboratories of the College. He devotes some time of each day in the College year to the instruction of students, and has opportunity to attend the clinics and pursue other lines of collegiate study.

Two Fellowships in pathology are established with a similar end in view and under corresponding regulations. These Fellows engage in original research under the direction of the Professor of Pathology, and may take part in the work of instruction of students.

A Fellowship in medicine and a Fellowship in surgery have been established with similar duties and on a like basis.

HOSPITAL INTERNES

Positions as internes in the Presbyterian, the Cook County Hospital, the Michael Reese Hospital, the St. Joseph Hospital, the St. Elizabeth's Hospital, the St. Luke's Hospital, the Augustana Hospital, the Chicago Hospital, the Alexian Brothers Hospital, the Passavant Hospital, the Chicago Policlinic, the German Hospital, the Norwegian Hospital, the Illinois Charitable Eye and Ear Infirmary, and in a much larger list of institutions outside of the city of Chicago which make appointments from the roll of qualified students are open each spring to graduates through a competitive examination held by the respective hospital staffs.

The occupants of these positions receive their board and lodging, and acquire experience in every department of practical medicine and surgery.

PRIZES

The Benjamin Rush Prize

A medal of the value of fifty dollars is given by the Faculty at each Commencement to that member of the graduating class who passes the highest examination in every department of medicine represented that year in the examination for the degree.

The Daniel Brainard Prize

A medal is annually given by the Faculty to the student who makes and presents to the College Museum the best accepted dissection in Surgical Anatomy.

The Freer Prizes

These prizes are derived from the income of a fund presented to the College by the late Nathan M. Freer, of the Board of Trustees, as a memorial of the names of two honored members of his family long identified with the highest interests of this institution.

The J. W. Freer Medal is awarded as a first prize to that member of the Junior class who presents the best written essay on one of the themes annually announced for competition to that class. A second prize is awarded to the next successful competitor. The three subjects from which selections may be made, one of which only can be chosen by each competitor, are announced to the class early in the collegiate year, the essays being submitted to the Faculty on the first of the ensuing April. The subjects for competition for the session of 1901–2 will be given by the Department of Medicine.

The L. C. P. Freer Medal is offered for the year 1901–2 as a first prize to that member of the Sophomore class who presents the best essay on any subject connected with anatomy. Students should consult the Professor of Pathology in regard to selection of topic for this prize. A second prize is awarded to the next most successful of the competitors. This prize will be competed for by students in the medical course of the University. The essays are required to be placed in the hands of the Faculty by April, 1902.

The Edward L. Holmes Prize

In honor of the late Edward L. Holmes, for many years the professor of Diseases of the Eye and Ear in Rush Medical College, and for several years its president, and who during his long career rendered distinguished services to the institution, the trustees have established the **Edward L. Holmes** prize for original research, to consist of a table and scholarship for one season, at the Marine Biological Laboratory at Wood's Holl, Mass.

This prize is offered in recognition of the great service which is rendered to the medical sciences by research work in biology. The prize will be offered each year to members of the Junior class, and will be awarded for the best piece of work on original research performed in any of the laboratories of Rush Medical College. The recipient of the prize will defray his personal expenses.

The De Laskie Miller Prize

This prize is annually given to the student who does the best work in obstetrics and gynecology.

FELLOWSHIPS AND SCHOLARSHIPS AT THE UNIVERSITY OF CHICAGO

1. *University Fellowships.* There are sixty University fellowships, divided as follows:
    1) Twenty fellowships, each yielding the sum of $520 annually, university fees to be paid out of this sum.
    2) Twenty fellowships, each yielding the sum of $320 annually, university fees to be paid out of this sum.
    3) Twenty graduate fellowships of equal rank with other university fellowships, yielding a sum equal to the university fees for three quarters.

2. *Special Fellowships.* In addition to the regular University Fellowships mentioned above, there are special Fellowships offered by individuals. These vary somewhat in number and amount from year to year. At present they are as follows:
    1) The *William A. and Fanny C. Talcott Fellowships and Scholarships.* In 1896 Wm. A. Talcott, of Rockford, Ill., endowed four Fellowships and Scholarships, two of which bear his name and two the name of his wife, Fanny C. Talcott. They are intended primarily for the benefit of graduates of the Rockford College, but in the absence of such beneficiaries may be assigned to others. They pay the tuition fees of those appointed to them.
    2) The *Bucknell Fellowship,* yielding $400, offered by Mr. Charles Miller, Franklin, Pa., is open to graduates of Bucknell University. The appointment to this fellowship is made by the Faculty of Bucknell University.
    3) The *Vassar Fellowship,* yielding $400, offered by friends of Vassar College. Open to graduates of Vassar College. The appointment to this fellowship is made by the Faculty of Vassar College.
    4) The *Joseph B. Loewenthal Fellowship in Chemistry,* endowed by Mr. Berthold Loewenthal, of Chicago, as a memorial of his son, Joseph B. Loewenthal. It yields about $420 to the incumbent annually appointed.
    5) Three special fellowships, yielding $320, $420, and $520 respectively, offered by friends of the University.
3. *Duties of Fellows.** Each student on a University Fellowship is expected to render assistance of some kind in connection with the work of the University. This assistance consists, for the most part, in service, *a*) as an instructor, either in the colleges of the University or in the affiliated colleges; *b*) as an assistant in reading examination papers; *c*) as an assistant on a University journal; or *d*) as an assistant in one of the departmental libraries, laboratories, or museums. In no case will a student be expected or allowed to devote so much time to the work here indicated as to interfere seriously with his study.
4. *Graduate Scholarships.* Twenty scholarships are assigned annually to students who have completed with honor the work of a Senior College.

    Students receiving graduate scholarships will be expected to render assistance in the libraries. laboratories, and museums, in amount to be determined by the Board of Libraries, Laboratories, and Museums.
5. *Special Graduate Scholarships.*
    1) The *Zuinglius Grover Memorial Scholarship* has been endowed by the Alumnæ of Dearborn Seminary of Chicago in memory of the founder of that Seminary. It provides for the tuition fees of "a woman in the undergraduate department."
    2) The *Lillian Gertrude Selz Scholarship,* endowed by Mr. Morris Selz and his sons E. F. and J. Harry Selz as a memorial of Lillian Gertrude Selz, provides for something more than the tuition fees of a student.
    3) The *Elbert H. Shirk Scholarship,* endowed by Mr. Milton Shirk, of Peru, Indiana, Mr. E. W. Shirk, of Chicago, and Mrs. Alice Shirk Edwards, of Peru, Indiana, as a memorial of their father, provides for the tuition fees of a student.
    4) The *Henry C. Lytton Scholarship,* endowed by Mr. Henry C. Lytton, of Chicago, provides for the tuition fees of a student.
    5) The *Catherine M. White Scholarships.* The late Catherine M. White, of Chicago, made provision in her will for the endowment of three (3) Scholarships, each providing for the tuition fees of a student.
    6) The *Andrew McLeish Scholarship,* endowed by Mr. Andrew McLeish, of Chicago, provides for the tuition fees of a student.
    7) The *Enos M. Barton Scholarship,* endowed by Mr. E. M. Barton, of Chicago, provides for the tuition fees of a student.
    8) A Scholarship not yet named has been established which will provide annually for the tuition fees of a student.
    9. The National Society of the Colonial Dames of America in the State of Illinois has made provision for two special Scholarships in History to continue five years.

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*Students desiring fuller information concerning fellowships and the conditions for application, will write for the Circular of Information for the Graduate Schools.

MEDICAL SOCIETIES

The fact that a large number of medical men practice in Chicago has led to the establishment of a number of medical societies, general and special. Among the more interesting to medical students in the early years of their course is the Chicago Pathological Society. A large number of clinical societies, notably the Chicago Medical Society and its various branches, will interest the student particularly in the later years of his course.

The Students' Medical Society of Rush Medical College meets monthly, on Friday evening, in the Laboratory Building. The research work of students in the laboratories and clinics is here reported, and curre topics of medical interest discussed.

The University of Chicago Medical Club meets on the first and third Monday evenings of each month in the amphitheater of the Kent Chemical Laboratory at 8:15. At the meetings of this society the advanced work and original research of the various laboratories will be reported, and topics of general medical and scientific interest will from time to time be discussed. The meetings will be open to medical students. The society holds no meetings during the Summer Quarter.

The University of Chicago
FOUNDED BY JOHN D. ROCKEFELLER

BULLETIN OF INFORMATION

VOL. II JUNE, 1902 NO. 2

THE COURSES IN MEDICINE

AND PREPARATORY TO MEDICINE

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CALENDAR FOR THE YEAR 1902–1903.

THE MEETINGS OF THE BOARD OF TRUSTEES ARE HELD ON THE SECOND TUESDAY OF EACH MONTH.

June 15	Sunday	Convocation Sunday.
June 16	Monday	Class and Alumni Day. Matriculation and Registration of incoming students. Summer Meeting of the *University Congregation.*
June 17	Tuesday	Founder's Day. — Summer Meeting of the *University Convocation.* Matriculation and Registration of incoming students.
June 18	Wednesday	First Term of Summer Quarter begins. Lectures and Recitations of the Summer Quarter begin.
July 4	Friday	Independence Day: a holiday.
July 25	Friday	Examinations for the First Term of the Summer Quarter. First Term of Summer Quarter ends. Matriculation and Registration of incoming students for the Second Term of *Summer* Quarter.
July 26	Saturday	Second Term of Summer Quarter begins.
Aug. 5	Tuesday	Registration of resident students for the *Autumn* Quarter.
Aug. 6	Wednesday	
Aug. 7	Thursday	
Aug. 29	Friday	Examinations for Second Term of the Summer Quarter. Autumn Meeting of the *University Congregation.*
Aug. 30	Saturday	Autumn Meeting of the *University Convocation.* Second Term of Summer Quarter ends.
Aug. 31–Sept. 30		Summer Recess.
Sept. 19	Friday	Autumn Examinations for admission to the *Junior* Colleges.
Sept. 20	Saturday	
Sept. 22	Monday	
Sept. 23	Tuesday	
Oct. 1	Wednesday	First Term of Autumn Quarter begins. Matriculation and Registration of incoming students.
Nov. 11	Tuesday	First Term of Autumn Quarter ends.
Nov. 12	Wednesday	Second Term of Autumn Quarter begins.
Nov. 27	Thursday	Thanksgiving Day; a holiday.
Nov. 28	Friday	A holiday.
Dec. 2	Tuesday	Registration of resident students for the *Winter* and *Spring* Quarters.
Dec. 3	Wednesday	
Dec. 4	Thursday	
Dec. 5	Friday	
Dec. 12	Friday	Winter Examinations for admission to the *Junior* Colleges.
Dec. 13	Saturday	
Dec. 15	Monday	
Dec. 16	Tuesday	
Dec. 14	Sunday	Convocation Sunday.
Dec. 16	Tuesday	Winter Meeting of the *University Convocation.*
Dec. 17	Wednesday	Winter Meeting of the *University Congregation.*
Dec. 17	Wednesday	Quarterly Examinations.
Dec. 18	Thursday	
Dec. 19	Friday	
Dec. 19	Friday	Second Term of Autumn Quarter ends.
Dec. 20-31		Quarterly Recess.
Jan. 1	Thursday	New Year's Day; a holiday.
Jan. 2	Friday	First Term of Winter Quarter begins. Matriculation and Registration incoming students.
Feb. 8	Sunday	Day of Prayer for Colleges.
Feb. 11	Wednesday	First Term of Winter Quarter ends.
Feb. 12	Thursday	Second Term of Winter Quarter begins. Lincoln's Birthday; a holiday.
Feb. 16	Monday	Last Day for receiving applications for fellowships.
Feb. 22	Sunday	Washington's Birthday.
Mar. 3	Tuesday	Registration of resident students for the *Spring* Quarter.
Mar. 4	Wednesday	
Mar. 5	Thursday	
Mar. 6	Friday	
Mar. 15	Sunday	Convocation Sunday.
Mar. 16	Monday	Spring Meeting of the *University Congregation.*
Mar. 17	Tuesday	Spring Meeting of the *University Convocation.* Annual Assignment of *Fellowships.*
Mar. 18	Wednesday	Quarterly Examinations.
Mar. 19	Thursday	
Mar. 20	Friday	
Mar. 20	Friday	Second Term of Winter Quarter ends.
Mar. 21-31		Quarterly Recess.
April 1	Wednesday	First Term of Spring Quarter begins. Matriculation and Registration of incoming students.
May 12	Tuesday	First Term of Spring Quarter ends.
May 13	Wednesday	Second Term of Spring Quarter begins.
May 30	Saturday	Memorial Day; a holiday.
June 2	Tuesday	Registration of resident students for the *Summer* and *Autumn* Quarters.
June 3	Wednesday	
June 4	Thursday	
June 5	Friday	
June 11	Thursday	Quarterly Examinations.
June 12	Friday	
June 13	Saturday	

OFFICERS OF ADMINISTRATION.

The President of the University, William Rainey Harper, *Haskell Museum*, First Floor, Room 10.
The University Recorder, Alonzo Ketcham Parker, *Haskell Museum*, First Floor, Room 11.
The University Chaplain, Charles Richmond Henderson, *Cobb Lecture Hall*, Third Floor, Room 16.
The University Registrar, Thomas Wakefield Goodspeed, *Cobb Lecture Hall*, First Floor, Room 1.
Secretary to the President, Francis Wayland Shepardson, *Haskell Museum*, First Floor, Room 10.
The Dean of Medical Students, John Milton Dodson, *Anatomy Building*, First Floor, Room 15.
The Dean in Medical Work, Elias Potter Lyon, *Anatomy Building*, First Floor, Room 15.
The Dean of Women, Marion Talbot, *Cobb Lecture Hall*, First Floor, Room 9.

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Dean ELIAS POTTER LYON, *ex officio.*
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Professorial Lecturer NICHOLAS SENN.
Professorial Lecturer WALTER STANLEY HAINES.
Professorial Lecturer EPHRAIM FLETCHER INGALS.
Professorial Lecturer JAMES NEVINS HYDE.
Professorial Lecturer FRANK BILLINGS.
Professorial Lecturer ARTHUR DEAN BEVAN.
Professorial Lecturer JOHN CLARENCE WEBSTER.
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Associate Professor CHARLES BENEDICT DAVENPORT.
Associate Professor EDWIN OAKES JORDAN.
Associate Professor FRANK RATTRAY LILLIE.
Assistant Professor ALBERT CHAUNCEY EYCLESHYMER.
Assistant Professor ROBERT RUSSELL BENSLEY.
Assistant Professor ROBERT ANDREWS MILLIKAN.
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Dr. DAVID JUDSON LINGLE.
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Dr. HERBERT NEWBY McCOY.
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Dr. WILLIAM BUCHANAN WHERRY.
Dr. HOWARD TAYLOR RICKETTS.
Dr. MARTIN H. FISCHER.
Dr. PRESTON KYES.

OFFICERS OF MEDICAL INSTRUCTION AND ADMINISTRATION.*

WILLIAM RAINEY HARPER, Ph.D., D.D., LL.D., *President of the University; Professor and Head of the Department of Semitic Languages and Literatures.*

CHARLES OTIS WHITMAN, Ph.D., LL.D., *Professor and Head of the Department of Zoölogy; Curator of the Zoölogical Museum.*

ALBERT ABRAHAM MICHELSON, Ph.D., Sc.D., LL.D., *Professor and Head of the Department of Physics.*

HENRY HERBERT DONALDSON, Ph.D., *Professor and Head of the Department of Neurology.*

JACQUES LOEB, M.D., *Professor and Head of the Department of Physiology.*

LUDVIG HEKTOEN, M.D., *Professor and Head of the Department of Pathology and Bacteriology.*

JOHN ULRIC NEF, Ph.D., *Professor and Head of the Department of Chemistry.*

LEWELLYS FRANKLIN BARKER, M.B., *Professor and Head of the Department of Anatomy.*

NICHOLAS SENN, M.D., Ph.D., LL.D., *Professorial Lecturer on Military Surgery.*

WALTER STANLEY HAINES, A.M., M.D., *Professorial Lecturer on Toxicology.*

EPHRAIM FLETCHER INGALS, A.M., M.D., *Professorial Lecturer on Medicine.*

JAMES NEVINS HYDE, A.M., M.D., *Professorial Lecturer on Skin, Genito-Urinary, and Venereal Diseases.*

JOHN MILTON DODSON, A.M., M.D., *Professorial Lecturer on Medicine; Dean of Medical Students.*

FRANK BILLINGS, S.M., M.D., *Professorial Lecturer on Medicine.*

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ALEXANDER SMITH, Ph.D., *Associate Professor of General Chemistry; Dean in the Junior Colleges.*

JULIUS STIEGLITZ, Ph.D., *Associate Professor of Chemistry.*

CHARLES BENEDICT DAVENPORT, Ph.D., *Associate Professor of Zoölogy and Embryology; Assistant Curator of the Zoölogical Museum.*

EDWIN OAKES JORDAN, Ph.D., *Associate Professor of Bacteriology.*

FRANK RATTRAY LILLIE, Ph.D., *Associate Professor of Embryology; Assistant Curator of the Zoölogical Museum.*

ALBERT CHAUNCEY EYCLESHYMER, Ph.D., *Assistant Professor of Anatomy.*

ELIAS POTTER LYON, Ph.D., *Assistant Professor of Physiology; Dean in Medical Work.*

ROBERT RUSSELL BENSLEY, A.B., M.D., *Assistant Professor of Anatomy.*

ALBERT PRESCOTT MATHEWS, Ph.D., *Assistant Professor of Physiological Chemistry.*

DAVID JUDSON LINGLE, Ph.D., *Instructor in Physiology.*

CHARLES MANNING CHILD, Ph.D., *Instructor in Zoölogy.*

LAUDER WILLIAM JONES, Ph.D., *Instructor in Chemistry.*

GEORGE E. SHAMBAUGH, M.D., *Instructor in Anatomy.*

HARRY GIDEON WELLS, A.M., M.D., *Instructor in Pathology.*

JOHN CHARLES HESSLER, Ph.D., *Instructor in Chemistry.*

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* With the exception of the President, the names in each group are arranged in the order of collegiate seniority.

DANIEL GRAISBERRY REVELL, A.B., M.B., *Associate in Anatomy.*
DEAN DeWITT LEWIS, A.B., M.D., *Associate in Anatomy.*
MARTIN H. FISCHER, M.D., *Associate in Physiology.*
WILLIAM BUCHANAN WHERRY, A.B., M.D., *Associate in Bacteriology.*
PRESTON KYES, A.M., M.D., *Associate in Anatomy.*
HOWARD TAYLOR RICKETTS, S.B., M.D., *Associate in Pathology.*
JAMES ROLLIN SLONAKER, Ph.D., *Assistant in Neurology.*
WALDEMAR KOCH, Ph.D., *Assistant in Pharmacology.*
SHINKISHI HATAI, Ph.D., *Research Assistant in Neurology.*
RALPH WALDO WEBSTER, M.D., *Assistant in Physiological Chemistry.*
ARTHUR WHITE GREELEY, A.M., *Assistant in Physiology.*
ERNEST E. IRONS, S.B., *Assistant in Bacteriology.*
JOHN W. SHEPHERD, A.M., *Assistant in Quantitative Analysis.*
BASIL C. L. HARVEY, A.B., M.B., *Assistant in Anatomy.*
WILLIAM DOUWES ZOETHOUT, Ph.D., *Assistant in Physiology* (Summer Quarter, 1902).
CHARLES HUGH NEILSON, A.M., *Research Assistant in Physiology.*
ROY H. BROWNLEE, A.B., *Lecture Assistant in Chemistry.*
WILLIS B. HOLMES, A.B., *Research Assistant in Chemistry.*
IRA H. DERBY, S.B., *Research Assistant in Chemistry.*
ELIZABETH HOPKINS DUNN, M.D., *Technical Assistant in Neurology.*
THOMAS B. FREAS, A.B., *Laboratory Inspector in Chemistry.*
MARY HEFFERAN, A.M., *Curator of Bacteriological Museum.*

FELLOWS APPOINTED FOR 1902–1903.

Charles Christopher Adams, S.M., Zoölogy.
Bennett Mills Allen, Ph.B., Zoölogy.
Raymond Foss Bacon, S.B., A.M., Chemistry.
William Jacob Baumgartner, A.M., Zoölogy.
Wallace Appleton Beatty, S.M., *Loewenthal* Fellow, Chemistry.
Orville Harry Brown, A.B., Physiology.
William MacAfee Bruce, A.M., Chemistry.
Samuel Charles Emley, A.B., M.D., Bacteriology.
Marion Elizabeth Hubbard, S.B., Zoölogy.
Charles Ingbert, A.M., Neurology.
Howard Pendleton Kirtley, Ph.B., Physiology.
Axel Leonard Melander, S.M., Zoölogy.
Moses Milton Portis, S.M., M.D., Pathology.
George Senn, B.S., Physiology.
Albert Ogle Shaklee, S.B., Chemistry.
Louis Neill Tate, S.B., Anatomy.
J. G. Wilson, M.D., Anatomy.

INTRODUCTORY STATEMENT.

For several years the University of Chicago has offered courses suitable for students who were preparing to undertake medical work, and also in several of the subjects usually included in the first two years of a medical college curriculum. In 1899 provision was made for courses in Practical Anatomy, and under the arrangement of affiliation with Rush Medical College, the University offered, during the session of 1899–1900, courses corresponding to all of the work of the Freshman year of that institution. Since June 19, 1901, the University offers instruction in all of the subjects of the first two years of the medical curriculum; namely, in Anatomy, both gross and microscopic, Neurology, Embryology, Physiology, Physiological Chemistry, Inorganic, Organic, and Analytical Chemistry, Toxicology, Pathology, Bacteriology, and Pharmacology. The student who has completed this work will be prepared to enter directly upon the clinical work, that is to say, the work of the third and fourth years of the medical school. All of the work of the first two years of Rush Medical College is offered at the University only. Students taking this work at the University will matriculate and register as students of Rush Medical College and likewise as students of the University. There will be no extra fee for such registration at the College, but the matriculation fee must be paid.

For the session beginning June 18, 1902,* students will be admitted to the medical course who comply with the requirements for admission to the Junior Colleges of the University of Chicago, corresponding to the requirements for admission to the Freshman year of an institution of equal rank, and have had, in addition, one year of college work; or they may be admitted with a condition of six Majors of University work to be taken at the University. The necessity, however, for a broader and more thorough preparation for the study of medicine is strongly emphasized, and every student is advised, before taking up the study of medicine, to procure a liberal education, such as can be obtained only in a well-equipped college or university. This preparation, extending over at least two years of college work, should include a thorough course in Mathematics, in German and French, and in the sciences of Physics, Chemistry, and Biology. The requirements for admission to the medical course will be increased after the ensuing year, and ultimately the Junior College certificate of the University, corresponding to the completion of the Sophomore year of a high grade college or university, will be demanded. (See pp. 11, 12.)

Attention is called to the fact that courses are offered in the departments of Arts, Literature, and Science of the University, in all the branches of a liberal education, and a medical student may take work in these branches by attendance during additional quarters, or to a limited extent by extra work during his attendance upon the medical course. Students desiring to take work of this character should consult with the Dean of Medical Students. Students having completed not less than eighteen Majors of University work, corresponding to the Freshman and Sophomore years of a high grade university or college, and having acquired a good knowledge of Physics, Chemistry, and Biology, and a reading knowledge of French and German, will be allowed to elect their work in the medical branches, subject to the restrictions imposed and to the approval of the Dean. (See p. 9, 15, 2.) Students of this class who have not completed the work for the Bachelor's degree may apply their credits in medical courses as Senior College electives for a Bachelor's degree. (See pp. 9, 30.) Not only is the medical work elective for students who are thus prepared, but the courses are so arranged that their attention may be concentrated upon a single subject, or upon allied subjects. For example, anticipation of the chemistry of the medical course will permit a student to devote more time to any of the more strictly medical sciences.

The teaching of the fundamental medical branches in an institution of general learning is believed to constitute a distinct step in advance in medical education. The student pursuing these studies in the atmosphere of an institution devoted to purely scientific work under the instruction of men whose time is wholly devoted to teaching and investigation along their respective lines, cannot but gain a broader and more thorough conception of these sciences. Such a training will not only afford a better preparation for the clinical courses of the medical college and for the practice of medicine and surgery, but will also enable the student to follow more easily in paths along which medical advances promise to be made, and to apply these new discoveries in his daily work.

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*See p. 16, § 3, no. 3, in regard to the best time for entering on the medical course.

LABORATORIES, EQUIPMENT, AND LIBRARIES.

THE HULL BIOLOGICAL LABORATORIES.

On December 14, 1895, Miss Helen Culver, of the city of Chicago, presented the University of Chicago with property valued at $1,000,000 — the whole gift, according to the terms of the letter of endowment, to be devoted to the increase and spread of knowledge within the field of the biological sciences. From this fund there have been erected, at the north end of the University grounds, four buildings to serve as laboratories for the Anatomical, Botanical, Physiological, and Zoölogical Sciences. Medical instruction is given in the Anatomical, Physiological, and Zoölogical Laboratories.

THE ANATOMICAL LABORATORY.

The Anatomical Laboratory is 120 by 50 feet, and four stories high, exclusive of the basement and attic, and was constructed to provide for Anatomy, both gross and microscopic, including Neurology.

In the basement are special rooms for keeping frogs and similar animals at low temperatures; a bone room, a cold storage room for anatomical material, and a crematory.

The first floor is occupied by three large laboratories for microscopic work (Histology, Microscopic Anatomy, Neurology, and Pathology), and a large photographic room containing a stone pier and connected with a dark room. On the second floor there is an additional room for general class work in microscopic branches, a lecture room, and an Osteological Laboratory. Here, too, are located the laboratories of the staff in Neurology and a laboratory for advanced work and original research in Neurology. On the third and fourth floors are situated the dissecting rooms for Human Anatomy, the private laboratories for instructors and research workers, and two laboratories for the making of special preparations. In the attic there is a well-lighted operating room adjoining a large animal room; in addition several storerooms are situated here. The laboratories are well equipped for work in gross and microscopic Anatomy and in Pathology, and especial facilities are afforded for advanced work and original research.

THE PHYSIOLOGICAL LABORATORY.

The Physiological Laboratory is 102 by 52 feet and four stories high, exclusive of the basement and attic. The basement contains a cold-storage room, aquarium room, an animal room, workshop, and storeroom. It is connected with the greenhouse of the laboratory. The first floor contains a general laboratory for beginners, a galvanometer room, a lecture room, and photographic room. The second floor contains a large lecture room with preparation room and storeroom, the departmental library, an optical room, two dark rooms, and a private laboratory. The third floor contains two laboratories for advanced workers in Physiology, a laboratory for beginners in Physiological Chemistry and Pharmacology, a balance room, and several smaller rooms for work in Physiological Chemistry, and Pharmacology. The fourth floor contains two rooms with cages for animals and an operating room. In addition, two laboratories for work in Physiological Chemistry and Pharmacology, a combustion room, and a room for work in gas analysis. The laboratories are well equipped both for general instruction in Physiology, Physiological Chemistry, and Pharmacology and for advanced and research work in these sciences.

THE ZOÖLOGICAL LABORATORY.

The Zoölogical Laboratory is 120 by 50 feet, and four stories high, exclusive of the basement.

On the first floor are located the library of the biological departments, a synoptical museum, a large laboratory for elementary Zoölogy and a laboratory for research work in Pathology. The second floor contains one large laboratory for beginners in research, and a number of smaller laboratories for more advanced work. The third floor contains three large laboratories for comparative anatomy and embryology, and a number of rooms for research. The fourth floor is devoted to the laboratories for Bacteriology, which are supplied with sterilizers, incubators, special microscopes, and other bacteriological apparatus, and are furnished with tables for microscopical work and for the usual laboratory manipulations. The basement contains one large room with glass-covered extension on the south side, designed for an aquarium, two rooms for use as aviaries, vivaria, etc., one room for palæontological material, and one for taxidermy and museum purposes.

The best optical and other apparatus demanded by zoölogical work are provided. There are series of models and charts illustrating embryological and morphological subjects, and ample facilities for keeping land and aquatic animals under favorable conditions for study.

THE KENT CHEMICAL LABORATORY.

The Chemical Laboratory provided by the generosity of Mr. Sidney A. Kent is 176 by 64 feet and three stories high exclusive of the basement. An amphitheater seating 750 people forms an annex to the building. Lectures are given in rooms on the first floor. The laboratory instruction in General Inorganic and Elementary Organic Chemistry is given on the third floor in three large laboratories accommodating 300 students. Each student is given a separate desk supplied with gas and water and is furnished with all necessary chemicals and apparatus. The laboratories for analytical chemistry are on the second and third floors. The advanced work in chemistry is done in general and private laboratories on the first and second floors. There are a number of small rooms used as balance, combustion, gas-analysis, photographic rooms, etc. The Chemical Library contains full sets of the most important journals, books of reference, and other works relating to Chemistry.

THE LIBRARIES.

The General Library is located on the corner of Fifty-eighth street and Ellis avenue. The building now occupied is temporary and is to be used until such time as a permanent library building may be erected.

The General Library is for the use of students in all departments of the University. Students who have matriculated may take at one time three volumes from the General Library. These may be kept two weeks, and at the end of that time, if desired, may be renewed for two weeks.

Former students may continue the use of the library by the payment of the library fee of $2.50 per quarter.

The total number of books at present in the library is approximately 320,005.

Number of volumes in departmental libraries of departments concerned in medical instruction, January 1, 1902: Biology, including Anatomy, Neurology, Physiology, Bacteriology, Pathology, Zoölogy, Physiological Chemistry, and Pharmacology, 9,904; Chemistry 1,891, Physics 1,491.

All the branch and departmental libraries are catalogued and classified. Most of the collections in the General Library are now permanently arranged.

The General Library is open on every week-day from 8:30 A. M. to 5:30 P. M. The Library receives 1,298 current periodical publications, including the transactions and proceedings of learned societies; the foreign serials alone numbering not less than 674. The Departmental Libraries are closed at 6 P. M., and are not open during the evening except to those to whom special permission has been granted by the departmental adviser.

The students of the University are permitted to use the books and periodicals in the Newberry Library and in the Crerar Library, both of which contain a large number of medical and general scientific works.

The Public Library of Chicago is also available to medical students for general reading.

ADMISSION TO THE MEDICAL COURSE.

GENERAL REGULATIONS.

Students are admitted to the Medical Course either as 1) *Medical Students*, or 2) as *Undergraduate Students* (candidates for a bachelor's degree, S.B., A.B.; or Ph.B.). 3) *Graduates* of the University of Chicago or of other universities or colleges of good standing are admitted to the Medical Course as Medical Students; they are allowed all the privileges of the members of the Graduate Schools of the University. 4) In addition to students in regular standing, provision is made for the admission to the University of undergraduate students not seeking degrees. Such students are known as *Unclassified Students.*

1. *Admission as a Medical Student.*
   - *a*) Each student must present to the faculty certificates of good moral character, signed by at least two physicians of good standing in the state in which the applicant last resided.
   - *b*) He must be able to comply with the requirements for admission to the Medical Courses of the University of Chicago (see p. 9).
   - *c*) He must matriculate and register as a student of Rush Medical College as well as of the University at the beginning of his course. Such

matriculation and registration is accomplished at the University.

2. *Admission as an Undergraduate Student* (as a candidate for a bachelor's degree).

   a) The first two years' work in Medicine may be taken as the third and fourth years of the bachelor of science course upon fulfillment of certain requirements for the degree (see p. 30) of this BULLETIN.

   A very considerable part of the first two years' work in Medicine may also be taken during the third and fourth years of the bachelor of arts or the bachelor of philosophy courses (see p. 30) of this BULLETIN.

   Students who wish to enter college and prepare to take the Medical work as part of their baccalaureate course may enter at the beginning of the Junior College Course (first college year) or at any farther stage of advancement).*

   b) Each student must present to the Faculty certificates of good moral character signed by at least two physicians of good standing in the state in which the applicant last resided.

   c) In order to comply with the rules of the Medical Examining Boards of several states a student will matriculate and register with the Dean of Rush Medical College (at the University) at the beginning of the first or second year's work in Medicine. He will continue to register, at the same time, with the Dean of the Senior Colleges until he receives a bachelor's degree.

3. *Admission as a Graduate Student.*

   a) Admission to the Graduate Schools of the University is granted (1) to those who have been graduated from the colleges of the University of Chicago with the degree A.B., Ph.B., or S.B.; (2) to those holding baccalaureate degrees from other institutions of good standing.

   b) Applications for admission in the case of students not graduates of the University should be accompanied by testimonials as to character and scholarship. Such testimonials should take the form of diplomas, written or printed theses, or satisfactory evidence in some other form of the student's fitness for admission.

   c) A Graduate Student taking the Medical Course will matriculate as a Medical Student. He may register with the Dean of the Graduate Schools or with the Dean of Medical Students, and must fulfill the conditions prescribed above in 1. *a*) and *c*).

   d) Advanced standing in the Medical Course is granted for work done in other colleges or medical schools according to the conditions stated on p. 12 of this BULLETIN.

4. *Unclassified Students.*

   a) Candidates for admission to the University as *Unclassified Students* (1) must be at least 21 years of age; (2) must show good reason for not entering upon a regular course; (3) *must take the entrance examinations of the departments in which they wish to work;* (4) must satisfy the Dean and the particular instructors under whom they desire to study that they are prepared to carry the courses elected.

   Unclassified students conform to all regulations of the University, and, having been admitted, their continuance depends on the maintenance of a satisfactory standing.

Note.—Students entering the University for the first time should make it a point to complete all arrangements for entrance, either by correspondence or in person, ***at least two days before the opening of the quarter.***

REQUIREMENTS FOR ADMISSION TO THE MEDICAL COURSES.

These comprise *a*) the successful completion of a four years' high-school or academy course, qualifying the student to enter the Junior College (Freshman class) of the University of Chicago,† and *b*) the Freshman year of a college course, or a full equivalent therefor.

a) The high-school course must have included at least 2‡ units of Latin (Cæsar and Elementary Grammar); 2 units of English (Rhetoric, Composition, and Literature); 2½ units of Mathematics (Algebra through Quadratics and Plane Geometry), 1 unit of History; 1 unit of Physics (including

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*A student desiring to enter the course as a candidate for the S.B., A.B., or Ph.B. degrees is requested to consult pp. 30, 31 of this BULLETIN and write for the *Circular of Information* of the Colleges, in which a complete statement is given of the requirements for the college degrees and of the conditions for admission to advanced standing in the colleges. He is also invited to enter into correspondence upon the subject with the Dean of the Senior Colleges, the University of Chicago, Chicago, Ill.

†A complete and more detailed statement of the requirements and the ground covered by each subject will be sent to any principal, teacher, or student on application to Dean of the Medical Students.

‡A unit corresponds to a daily recitation throughout the school year of thirty-six weeks.

laboratory work), 1 unit of Chemistry (including laboratory work), and 5½ units in any of the other studies usually included in a high-school curriculum. A diploma is not accepted as sufficient evidence of such preparation, but specific statement is required as to the amount and character of the work in each branch of study. *Blanks are furnished by the University for the presentation of such credits. and will be mailed on application to the Dean of Medical Students.*

Such credits are accepted without examination from affiliated or co-operating schools (see list below). Students from schools not recognized by the University must submit to examination in the branches required. Examinations for admission are conducted at the University on the dates mentioned in the Calendar (see p. 2).

b) In lieu of the Freshman year of college work there will be accepted six* Majors of work selected from the branches which especially prepare one for the study of Medicine, viz.: English, three Majors; German or French, three Majors; Mathematics, two Majors; Philosophy, one Major; Physics, three Majors; Chemistry, three to four Majors; Biology, one Major; Comparative Anatomy, one or two Majors. This preparation may be accomplished at the University of Chicago in two quarters or less.

Students who possess only the requirements for admission to a Junior College may be admitted to the Medical Courses for the year beginning June 18, 1902, conditioned in the six Majors of University work. They must remove these conditions, however, before they can register for any of the courses of the second year of the medical curriculum (see "Second Nine Majors of Work" p. 16).

Such students are strongly advised to enter the University at the beginning of the Summer Quarter in order to make up as much as possible of this work before the Autumn Quarter.

ADMISSION CREDITS.

When a student presents credit for admission units from an affiliated or co-operating school (*see list on pp. 10, 11*), *such credit is allowed without further examination. Admission will also be granted, without examination, on the basis of work done in accredited schools of certain State Universities* (see p. 11, § 5). *If a credit be presented for work done at any other school, the student is required to pass an examination conducted by the University* (see p. 10, § 1). APPLICATION BLANKS *for presenting such credits will be furnished on application to the Dean of Medical Students.*

EXAMINATIONS AND ADMISSION WITHOUT EXAMINATION.

1. *Times and Places of Examinations.* Examinations for admission are held at the University three times a year. (For dates see Calendar, p. 2.) They are also given at the request of students or teachers at any of the regular dates, in cities outside of Chicago in which satisfactory arrangements can be made. Applications for such examinations should be made to the Dean of Affiliations at least 30 days in advance. Examinations for admission at other than the regular dates may be given only at the University, by special permission of the Dean, and upon the payment of a fee of not less than $10.00 nor more than $15.00 (the amount being dependent on the number of examinations taken).

   Candidates for admission are not required to take all the examinations at one time.

2. *Students from Morgan Park Academy, the South Side Academy, and the Affiliated and Co-operating Schools.* Students from these schools are admitted to the University upon presentation of a *subject certificate* covering each of the subjects stated above as required for admission. The affiliated and co-operating schools are named below:

3 *Affiliated Schools.* The following is the list of affiliated schools doing preparatory work: Bradley Polytechnic Institute, Peoria, Ill.; Culver Military Academy, Culver, Ind.; Frances Shimer Academy, Mt. Carroll, Ill.; Harvard School, Kenwood Institute, Chicago Manual Training School, Princeton-Yale School, Dearborn Seminary, the University School for Girls, all of Chicago; Rugby School, Kenilworth, Ill.; Wayland Academy, Beaver Dam, Wis.; Elgin Academy, Elgin, Ill.

4. *Co-operating Schools.* The following is the list of Co-operating secondary schools:

   The High Schools of Chicago, viz.: Austin, Calumet, Englewood, English High and Manual Training, Hyde Park, Jefferson, John Marshall, Joseph Medill, Lake, Lake View, Robert Waller, Northwest Division, South, Chicago,

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* A Major corresponds to a daily lecture or recitation of one hour (laboratory work two hours) for one quarter, a total of 60 hours of lecture or recitation work, or 120 hours of laboratory work.

South Division, West Division, William McKinley, the University School for Boys.

Other High Schools in Illinois: Aurora (East Side), Aurora (West Side), Bloomington, Blue Island, Clyde, De Kalb, Dixon (South Side), Elgin, Evanston Township, Ferry Hall Seminary (Lake Forest), Freeport, Harvey, Hinsdale, Joliet, La Salle, Lyons Township, Moline, Morrison, Oak Park, Ottawa Township, Peoria, Princeton, Quincy, Riverside, Rockford, Rock Island, Springfield, Sterling, Sycamore, Waukegan, and Wheaton.

In California: San Francisco Girls' and Lowell High Schools.

In Colorado: Colorado Springs, Denver, West Denver and Pueblo (Central and Centennial) High Schools.

In Indiana: Auburn, Fort Wayne High School, Goshen, Indianapolis High School, Indianapolis Industrial Training School, Classical School for Girls (Indianapolis), La Porte, Michigan City, Terre Haute, and Richmond High Schools.

In Iowa: Davenport, Des Moines (West Side), Dubuque, Keokuk, Sioux City, Clinton, Cedar Rapids, Ottumwa, and Council Bluffs High Schools.

In Kansas: Leavenworth, Fort Scott, and Topeka High Schools.

In Kentucky: Boys' High School and Girls' High School, Louisville.

In Michigan: Michigan Military Academy (Orchard Lake), Battle Creek, Bay View, Grand Rapids (Central), St. Joseph, Saginaw, and Benton Harbor High Schools.

In Minnesota: Duluth (Central), Minneapolis Central and East Side High Schools, and St. Mary's Hall and Shattuck School, Faribault.

In Missouri: Hosmer Hall (St. Louis), St. Louis and Kansas City High, Westport, and Manual Training Schools, St. Joseph.

In Nebraska: Omaha High School, Brownell Hall, Omaha.

In New York: Masten Park High School, Buffalo.

In Ohio: Akron, Canton, Cleveland (Central), Cleveland (East Side), Cleveland (Lincoln), Cleveland (South Side), Columbus (Central, North, and East), Findlay, Toledo (Central), Dayton (Steele High School), Sandusky, and Youngstown High Schools.

In Pennsylvania: Pittsburgh Central High School and Westtown Boarding School.

In Wisconsin: Carroll College (Waukesha), Milwaukee (S., E., and W. Side) Racine and Waukesha High Schools, Milwaukee Downer College, Milwaukee, and Hillside Home School.

5. *Accredited Schools of Certain State Universities.*

For the year, beginning June 18, 1902, credits from the following schools, in addition to the foregoing list, will be accepted for admission to the **Medical Course** of the University: Four-year High Schools and Academies on the accredited lists of the following universities: the University of Wisconsin, the University of Michigan, the University of Minnesota, the University of Iowa, the University of Illinois, the University of Nebraska, the University of Kansas, the University of Indiana, and the University of Ohio.

REQUIREMENTS FOR ADMISSION IN 1903–4, 1904–5, AND 1905–6.

After June 18, 1903, there will be demanded, in addition to the requirements for admission to the Junior College (Freshman class), *twelve Majors* of college work, six of which must have been in branches which especially prepare one for the study of medicine (see p. 30). In lieu of these twelve Majors, nine will be accepted if taken at the University in the branches mentioned. Two Majors of college chemistry, in addition to one year of high-school chemistry, and a thorough course in elementary biology, with laboratory work, must have been taken.

After June 18, 1904, *eighteen Majors* of college work will be required, or thirteen Majors of work at the University in the branches especially recommended as preparatory to medicine. The student's preparation must have included the chemistry and biology specified in the preceding paragraph, together with one Major of organic chemistry and one Major of college physics.

After June 18, 1905, eighteen Majors of college work will be required, all of which must have been in the branches specified, and the student must possess, in addition to the courses mentioned in the two preceding paragraphs, a reading knowledge of German and French.

See p. 30 of this BULLETIN for the two years' course of college studies recommended for students preparing to study medicine.

Attention is called to the fact that the extra credits which will be required in addition to high-school work may be secured in the Colleges of Arts, Literature, and Science of the University of Chicago by attendance during extra quarters before entering the medical course or, in small part, by taking extra work in these colleges during the student's attendance upon the medical course. A student may qualify for admission to the medical course by prolonging his attendance or taking extra work in the University. Credit will be accepted for such work in any other college or university of equal standing.

ADMISSION TO ADVANCED STANDING IN THE MEDICAL COURSE.

Students are admitted to advanced standing in the medical course of the University as follows:

First. Students from other medical schools whose standards are fully equivalent to those of this institution may receive credit for time spent — estimated in months — and for work successfully completed in such institutions provided it is equivalent to corresponding work in the medical course in the University. Such a student should give an explicit statement in regard to his preliminary education before beginning the study of medicine, the date of beginning and ending of each session attended in a medical college, together with the name of the college and a statement of the studies which he has successfully completed, this latter statement setting forth, if possible, the exact number of hours given to each subject.

Second. Graduates of recognized Colleges of Arts or Science which require a regular attendance of four years as essential to graduation may be given credit for each Major of work (or a full equivalent therefor) corresponding to any of the work in medical courses. *A Major corresponds to sixty hours of didactic or recitation work, or one hundred and twenty hours of laboratory work*, or of lectures and laboratory work in the given proportion. Students of this class applying for advanced standing should state fully the date of the beginning and ending of each session attended at a university or college, together with the name of such university or college, and a statement of all the work taken in any of the following branches: German, French, Chemistry, Physics, and any of the Biological branches.

Application Blanks. Blanks for presenting these credits, will be furnished on application to the Dean of Medical Students.

A student may matriculate at any time in person or by correspondence.

GENERAL INFORMATION.

ROUTINE OF ENTRANCE.

Applications should be addressed to The University of Chicago, Chicago, Ill. When presenting himself for admission to the University, the student should bring his *card of admission credits* (see pp. 11, 12) if he is entering the medical course at its beginning; his *letter of dismissal* and an official statement concerning his previous work if he is entering with advanced standing from another institution; and his *diploma* if he is applying for admission to a Graduate School.

These documents should be presented at the office of the Dean of Medical Students. Detailed directions will be furnished in the Dean's office as to the mode of matriculating and registering for courses of instruction desired.

FEES FOR MATRICULATION, TUITION; DEPOSITS AND APPARATUS.

1. *Matriculation Fee.*
   - *a*) The Matriculation Fee is $5.00 and is required of every student on entrance to the University. It is payable but once.
   - *b*) A Medical student will also matriculate as a student of Rush Medical College. The fee is $5.00 and the matriculation is good for the complete medical course including the clinical years.
   - *c*) An undergraduate student, candidate for a bachelor's degree, who wishes to take the Medical Course as a part of the work for the bachelor's degree will matriculate also as a student of Rush Medical College at the beginning of the first

year of his work in the Medical course (see p. 9, 2*c*). The fee is $5.00 and the matriculation is good for the complete medical course including the clinical years.

NOTE.— Matriculation for Rush Medical College can be accomplished at the University through the Dean of Medical Students.

2. *Tuition Fee.*

a) The Tuition fee for the medical courses (3 to 3½ Majors each quarter) is $55.00 per quarter including all laboratory fees.*

Under the medical practice acts and the rules of the medical examining boards of most of the states of this country, an applicant for a license to practice must have attended at least four annual sessions in a recognized medical school. Therefore, a student taking the medical courses with a view of procuring the degree of M.D., must matriculate *as a medical student*, at least forty-five months before the date of his expected graduation in medicine. From the date of such matriculation he is required to pay the tuition fee for the medical courses, whether he is registered as a senior-college student, a graduate student or as a medical-course student.

NOTE.—A student who is taking the medical courses with no intention of securing the medical degree, may, if he prefers, pay the usual University fee of $40.00 per quarter with additional laboratory fees as follows:

In Chemistry and Practical Gross Anatomy $5.00 for a Major course and $2.50 for a Minor course.

In all Biological Laboratory courses except Practical Gross Anatomy $2.50 for a Major course and $1.25 for a Minor course.

b) A reduction is made in case of students taking only one Major (or equivalent), one-half the full tuition fee being charged.

c) Physicians and graduate students taking only one course (one Major) are charged $20.00 per quarter; for more than one course the full tuition fee of $40.00 per quarter is charged in addition to laboratory fees.

d) *All tuition and laboratory fees are due and payable on or before the* FIRST *day of* EACH QUARTER. *All fees are payable to the Registrar, Cobb Lecture Hall, Room A1.*

Registration is not complete until all University bills are paid. Those who fail to meet this obligation within the first five days of the quarter are not regarded as members of the University. After the fifth day, to secure membership in the University the consent of the Dean and the payment of a fee of $5.00 for late registration will be required.

It is intended to increase gradually the medical tuition fees, but a student in continuous attendance (at least two quarters each year) may pursue his whole course by paying the fees in vogue at the time of his matriculation.

3. *Deposits.*

a) A deposit of five dollars is required from each student to cover the cost of unnecessary damage in the University buildings, and of avoidable loss and breakage in the laboratories. Deductions will be made from this deposit to cover the cost of articles not returned, or of damage to University property. Each student will be charged for damage or loss for which he is individually responsible, and for his *pro rata* share of damage or loss, the responsibility for which cannot be individually located. The deposit must be made on entering the University.

b) Each student who procures a skeleton from the Osteological Laboratory will deposit twelve dollars for the same, which sum will be refunded when the skeleton is returned uninjured; he may, however, retain the skeleton if he so desires, in exchange for the amount deposited.

4. *Microscopes and Other Laboratory Apparatus and Supplies.*

a) A compound microscope is required for most of the medical courses. Every student is strongly advised to purchase a good microscope, with an immersion lens, in order that he may become familiar with the same instrument which he will use after his graduation. Students not possessing a microscope may rent one from the University Supply Department, at a cost of $1.50 per quarter for a compound microscope, and $1.00 additional for an immersion lens.

b) Coupon tickets ($2.50 or $5.00) may be procured from the Registrar for the purchase, at the supply department, of dissecting implements, microscope slides, covers, and slide boxes, chemical apparatus (breakage), and such other appliances as may be required in the laboratory courses.

c) The necessary text-books may be purchased at the University Press.

d) All students taking courses in the Department of Physical Culture are required to provide themselves with a gymnasium suit for use in the gymnasium. The cost of such a suit is about $4.00.

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*For students who were in actual attendance on the medical courses during the Spring Quarter, 1902, or previous thereto, this fee is $52.50 per quarter.

ROOMS, BOARD, AND GENERAL EXPENSES.

Nine dormitories have thus far been erected in the quadrangles. Two of these are reserved for the students of the Divinity School and four are for women. A University House is organized in each dormitory; each House has a Head, appointed by the president of the University, and a House Committee, elected by the members; also a House Counselor, selected from the Faculties of the University by the members of the House. The membership of the House is determined by election, and each House is self-governing under the general control of the University Council.

The cost of rooms in the dormitories is from $14.00 to $75.00 per quarter of twelve weeks. This includes heat, light, and care. The rooms in Snell Hall, and all but one on each floor of Foster, Kelly, Green, and Beecher Halls, are single, and intended for occupancy by one student each, unless special arrangement otherwise is made with the Head of the House. In North and Hitchcock Halls the rooms are single and in suites of a study and two sleeping rooms. Diagrams of the halls, showing prices of the rooms, with full particulars, will be sent by the Registrar on application. Rooms will not be rented for a shorter period than a quarter, except in the Summer Quarter. If a student desires to surrender a room at the end of the quarter, notice to that effect must be given the Registrar three weeks prior to that date. The rooms are furnished with study table, chairs, bookcase, bedstead and mattress, bureau-commode, mirror, chamberware, and carpet rug. Rooms cannot be subrented, nor can exchange or transfer of rooms be made except by permission of the Registrar. In case of vacancies, applicants will be assigned rooms in the order of application. Each hall for women has separate dining hall and parlors. The cost of table board in these halls is $42 a quarter.

All applications for rooms, or for information concerning rooms and board within or without the quadrangles, should be made to the Registrar.

Undergraduate students not living in University Houses are not permitted to room in any building in which a family does not reside.

The following table will furnish an estimate of the annual expenses for thirty-six weeks of a medical student in the University, residing within the quadrangles:

	LOWEST	AVERAGE	LIBERAL
University bill, tuition [*] [†]	$165 00	$165 00	$165 00
Rent and care of room	42 00	105 00	225 00
Board	90 00	126 00	225 00
Laundry	15 00	25 00	35 00
Text-books and stationery	10 00	20 00	50 00
	$322 00	$441 00	$700 00

It is believed that students who find it necessary to reduce expenses below the lowest of these estimates can do so. Rooms outside the quadrangles, furnished, with heat, light, and care, may be obtained at from $1.00 a week upwards, the $1.00 rate being easily secured where two students room together. Many places offer room and board from $4.50 upwards. There are student clubs which secure board at cost, the rate during the past year ranging from $2.25 to $2.75 a week. A list of approved boarding places outside the quadrangles is kept on file at the BUREAU OF INFORMATION, Cobb Lecture Hall, and information regarding them may there be obtained.

THE QUARTER SYSTEM.

The Academic year of the University of Chicago and of Rush Medical College is divided into four quarters. These are designated as the Summer, Autumn, Winter, and Spring Quarters, beginning, respectively, on June 18, 1902, and on the first of October, the first of January, and on the first of April, each continuing for twelve weeks. A recess of one week occurs between the end of each quarter and the beginning of the next following, excepting that there is no recess between the end of the Spring and the beginning of the Summer Quarter, and that there is a recess of one month at the close of the Summer Quarter.

THE MEDICAL CURRICULUM AS RELATED TO THE QUARTER SYSTEM.

The general course of instruction in Rush Medical College requires four years of study in residence, with a minimum of attendance upon three quarters of each year. These years are designated as the Freshman, Sophomore, Junior, and Senior years, respectively.

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[*] Medical students attending the first quarter must pay the matriculation fees, $5.00 to the University and $5.00 to Rush Medical College.

[†] *This item is reduced to $157.50 for Rush Medical students, who matriculated on or before April 1, 1902.*

A student may begin his college work on the first day of any quarter [see, however, p. 16, § 3, no. 3)], and may continue in residence for as many successive quarters as he desires, and will receive credit for work accomplished. Attendance during all the four quarters of the year is optional, but will not secure a time-credit of more than one year in a medical school. At least forty-five months must elapse between the date of a first matriculation and the date of graduation. Under the restrictions imposed, this system does not conflict with the existing medical practice acts, nor with the rulings of the various State Boards of Medical Examiners.

THE SUMMER QUARTER.

Attention is directed to the special opportunities afforded for medical study in the Summer Quarter. The climate of Chicago is particularly well adapted to midsummer work. Instruction in all departments is given in the Summer Quarter.

THE WORK OF THE MEDICAL COURSE.

1. *Outline of the Course.*

The course for the first two years' work in Medicine consists mainly of instruction in the fundamental medical sciences: Chemistry, Human Anatomy, Microscopic Anatomy, Histology, Neurology, and Embryology, Physiology, Physiological Chemistry, Toxicology, Pharmacology, Pathology, and Bacteriology.

2. *Amount of Work.*

The amount of work required is eighteen Majors. A *Major* (Mj.) is the unit of work and consists of five hours per week in class-room throughout one quarter (12 weeks) or the equivalent amount of laboratory work a week (a total of 60 hours class-room work or the equivalent amount of laboratory work). From two to three hours of laboratory work are regarded as the equivalent of one hour of class-room work.

A *Minor* (M.) consists of five hours a week in class-room, throughout one term (six weeks or the equivalent amount of laboratory (a total of 30 hours of class-room work, or an equivalent amount of laboratory work).

A *Double Major* (DMj.) course occupies twice as many hours per week as does a Major, a *half Major* course (½Mj.) one-half the time per week.

3. *The Curriculum.*

1) Except in the case of certain students with special preparation (see below, 2) all the work of the Medical Course is prescribed for those who wish to receive credit for the first two years' work in Medicine. It consists of the following courses:*

   a) Chemistry, 2½ Majors† (1B, 2B, and 4¶).

   b) Anatomy: 7 Majors, as follows:
      Osteology, ½ Major (4).
      Human Anatomy (Dissecting), three Majors (1, 2, 3).
      Splanchnology, Histology, and Cytology, 1½ Majors (10, 11).
      Embryology, 1 Major (Zoölogy 20).
      Neurology, 1 Major (Neurology 3).

   c) Physiology: 6 Majors, as follows:
      Physiology, 3½ Majors (12, 13, 14).
      Physiological Chemistry, 1½ Majors (20, 25).
      Pharmacology, 1 Major (21).

   d) Pathology: 2½ Majors, as follows:
      Bacteriology, 1 Major (1).
      Pathology, 1½ Majors (2).

2) An undergraduate or a graduate student, who has taken substantially the course of college studies recommended as a preparation for Medicine (see p. 30), or who has completed the Freshman and Sophomore years of a university or college of good standing, and has acquired a good knowledge of physics, chemistry, and biology, and a reading knowledge of German and French, may elect his work in the medical course, in view of his special preparation for the medical branches. His selection is subject to the approval of the Dean of Medical Students, and of the head of each department in which he elects his work. In electing his work he should keep in mind that a minimum amount of work in the several branches is required in the course for the degree of Doctor of Medicine (see "Requirements for Graduation in Rush Medical College," p. 31 of this Bulletin).

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*Detailed statements concerning the courses are given below under the various departments of instruction. They should be consulted in every case *in regard to equivalent courses which may be substituted for those whose numbers are given in the above table.*

†When no credit has been received for High School Chemistry on admission one additional Major must be taken. See pp. 18, 19. Courses 1, 2, 3, and 4.

¶The numbers refer to the course numbers in the corresponding department.

3) The curriculum of instruction has been arranged in such a way as to insure for the student beginning his medical studies with any single quarter of the year, a complete annual course during any three consecutive quarters; *but students are advised to begin their medical work proper with the Autumn Quarter, if possible.*

The following table shows the arrangement of the courses for the six quarters of work comprised in the first two years of Medicine and the recommended sequence of studies. No student, however, is obliged to follow the order given, or to take full work in any quarter. Credit will be given for every course satisfactorily completed.

4. *Arrangement of Courses for Six Quarters.*

FIRST NINE MAJORS OF WORK.

AUTUMN, 1902.

Chemistry (1 B*), 1 Major; *Splanchnology, Histology, and Cytology* (Anat. 10), ½ Major; *Osteology* (Anat. 4), ½ Major; *Human Anatomy* (1 or 2), 1 Major. The following other courses are given in this quarter, and are open to students with advanced standing and the necessary prerequisites: Bacteriology, Physiology, Analytical and Organic Chemistry, Toxicology, Human Anatomy, and advanced work in all the departments.

WINTER, 1903.

Chemistry (2 B), 1 Major; *Splanchnology, Histology, and Cytology* (Anat. 11), 1 Major; *Human Anatomy* (1 or 2), 1 Major. Other courses given are: Physiology, Analytical and Organic Chemistry, Physiological Chemistry, Pathology, and advanced work in all the departments.

SPRING 1903.

Chemistry (4), ½ Major; *Embryology* (Zoölogy 20), 1 Major; *Physiology* (12), 1½ Majors. Other courses given are: Embryology, Analytical and Organic Chemistry, Pathology, and advanced work in all the departments.

SECOND NINE MAJORS OF WORK.

AUTUMN, 1902.

Neurology (3), 1 Major; *Bacteriology* (Pathol. 1) for one section, 1 Major; *Physiology* (13), 1 Major; *Human Anatomy* (3), 1 Major for one section. Other courses given are: Toxicology, Human Anatomy, Chemistry, and advanced work in all the departments.

WINTER, 1903.

Physiological Chemistry (Physiol. 20), 1 Major; *Physiology* (14), 1 Major; *Anatomy* (Anat. 3) for one section, 1 Major; *Bacteriology* (Pathol. 1) for one section, 1 Major. Other courses given are: Neurology, Human Anatomy, Splanchnology, Chemistry, and advanced work in all of the departments.

SPRING, 1903.

Pathology (2), 1½ Majors; *Pharmacology* (Physiol. 21), 1 Double Minor; *Physiological Chemistry* (Physiol. 25), 1 Minor. Other courses given are: Embryology, Physiology, Human Anatomy, Chemistry, and advanced work in all the departments.

5. *Courses given in the Summer Quarter.*

In the **Summer Quarter, 1902,** the following courses for Medical students are announced (for further information apply for *Quarterly Announcements*, Summer Quarter, 1902): General Physics (3 and 19A), General Inorganic Chemistry (1, 2, 1A, 1B, 2A, 2B), General Organic Chemistry (17, 18, 20, 21, and 22), Bacteriology (1, 5D), Embryology (18), Histology, Splanchnology (12, 10A, 11A, 32), Osteology (4A), Physiology (12, 14, 20, 21, 25), Neurology (3, 1A), Pathology (2, 4, 10), and advanced courses in Physics, Chemistry, Biology, Anatomy, and Neurology. Special courses for physicians are given in Anatomy.

6. *Examinations in the Fundamental Subjects.*

A final examination must be passed in 1) Anatomy (including Embryology and Neurology;) 2) Physiology (including Physiological Chemistry and Pharmacology), and 3) Pathology (including Bacteriology). This may be taken at the close of the first eighteen Majors of work of the medical course, or at any subsequent time previous to the last quarter of the medical course. Final examinations in these branches are held each quarter, but a student wishing to present himself for examination in any given quarter, must notify the Dean of Medical Students to that effect during the first two weeks of the quarter.

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* The numbers refer to the course numbers in the departments named. The departmental announcements below should be consulted in regard to equivalent courses which may be substituted for those whose numbers are given in the above table.

XX. THE DEPARTMENT OF CHEMISTRY.[*][†]

OFFICERS OF INSTRUCTION.

JOHN ULRIC NEF, PH.D., *Professor and Head of the Department of Chemistry.*
ALEXANDER SMITH, PH.D., *Associate Professor of General Chemistry.*
JULIUS STIEGLITZ, PH.D., *Associate Professor of Chemistry.*
JOHN C. HESSLER, PH.D., *Instructor in Chemistry.*
HERBERT NEWBY McCOY, PH.D., *Instructor in Chemistry.*
LAUDER W. JONES, PH.D., *Instructor in Analytical Chemistry.*
WILLIS B. HOLMES, PH.D., *Research Assistant in Chemistry.*
IRA M. DERBY, S.B., *Research Assistant in Chemistry.*
ROY HUTCHISON BROWNLEE, A.B., *Lecture Assistant.*
THOMAS B. FREAS, A.B., *Laboratory Inspector.*
JOHN W. SHEPHERD, A.M., *Assistant in Quantitative Analysis.*

WALTER STANLEY HAINES, A.M., M.D., *Professor of Chemistry, Pharmacy, and Toxicology, Rush Medical College; Professorial Lecturer on Toxicology.*

FELLOWS.

1902-1903.

RAYMOND BACON, S.B, A.M.
WALLACE APPLETON BEATTY, S.M.,
Loewenthal Fellow.
WILLIAM McAFEE BRUCE, A.M.
ALFRED OGLE SHAKLEE, S. B.

INTRODUCTORY.

In this department are offered (1) courses which are suited for providing the preparation in the science of Chemistry that is indispensable to the study and practice of Medicine; (2) courses which afford the student an opportunity for acquiring a more thorough and complete preparation for following intelligently the rapid advances in modern physiology and other medical subjects; and (3) courses which are indispensable for those who intend to assist in this advance by devoting themselves in part or exclusively to research in medical subjects, after completing their medical course.

REQUIREMENTS AND ELECTIVES IN CHEMISTRY.

Medical students who receive entrance credit for High School Chemistry[‡] are required to take General Chemistry, 1B and 2B, or the two Double Minor Courses, 1A and 2A (Summer Quarter).

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[*] For courses in *Physiological Chemistry* see the Department of Physiology.

[†] The courses in Physics recommended to undergraduate students preparing to study medicine (see p. 30) are the following courses offered in the Department of Physics:

0. **Elementary Physics.**—A first course in the elements of Physics (see prerequisite to Course 1).
Mj. Autumn Quarter; 9:30. DR. GALE.
Continued. Mj. Winter Quarter; 9:30. MR. HOBBS.

1. **General Physics.**—A course in General Physics in which are presented mainly from the experimental standpoint the most important principles involved in the study of mechanics, properties of liquids and gases, heat and sound.
10 hrs. a week. Mj. Each quarter.
Summer Quarter; 8:30-10:30. MR. HOBBS.
11:00- 1:00. DR. GALE.
Repeated. Mj. Autumn Quarter; 8:30-10:30; 11:00-1:00.
MR. HOBBS AND MR. KINSLEY.
Repeated. Mj. Winter Quarter; 11:00-1:00.
MR. HOBBS.
Repeated. Mj. Spring Quarter; 8:30-10:30.
DR. GALE.
Prerequisite: *(Entrance) Physics, or both Majors of Course 0 and Plane Trigonometry.*

2. **General Physics.**—A continuation of Course 1 covering the subjects of electricity and light.
10 hrs. a week. Mj. Summer Quarter; 2:00-4:00.
MR. HOBBS AND MR. KINSLEY.
Repeated. Mj. Winter Quarter; 8:30-10:30.
ASSISTANT PROFESSOR MILLIKAN.
Prerequisite: *General Physics 1.*

3. **General Physics.**—A course of lectures and demonstrations intended to complete a year's work in Junior College Physics. The most important principles of Physics not treated in Courses 1 and 2 are presented from the lecture standpoint. 5 hrs. a week. Mj. Spring Quarter; 9:30.
ASSISTANT PROFESSOR MILLIKAN,
with occasional lectures by PROFESSOR MICHELSON.
Repeated. Mj. Summer Quarter; 9:30.
ASSISTANT PROFESSOR MANN.
Prerequisite: *General Physics 1.*

More advanced courses are described in the departmental announcements of the University.

[‡] Medical students who enter without receiving credit for High School Chemistry are required to take General Chemistry, Courses 1, 2, and 3, or 1A, 2A (2Mj, Summer Quarter), and the lectures in Organic Chemistry, 4 (½Mj).

All medical students are required to take the lectures on Organic Chemistry 4 (½Mj.). Organic Chemistry, 17 (Mj.), Summer Quarter, or 14 and 15 (2Mj.) may be substituted for Course 4.

Students who are preparing for the study of medicine, and who are also candidates for a bachelor's degree in the University of Chicago, are strongly recommended to take at least three Majors more of Chemistry, viz., Qualitative Analysis, 6 and 7, and the laboratory work in Organic Chemistry, 5 or 18 (see p. 30, II, 1).

Candidates for a bachelor's degree who expect to do research work in Physiology or allied medical subjects may with advantage elect further courses from the following: Quantitative Analysis, 8; Organic Chemistry, 14, 15, and 16; Theoretical Chemistry, 31 and 32; or Advanced General Chemistry, 23 (see p. 30, II, 2).

COURSES OF INSTRUCTION.

Summer Quarter, 1902 — Spring Quarter, 1903.

M=Minor course=a single course for six weeks. DM=Double Minor course=a double course (two hours daily) for six weeks. Mj=Major course=a single course for twelve weeks. DMj=Double Major course=double course for twelve weeks.

PRIMARILY FOR THE JUNIOR COLLEGES.

1. **General Inorganic Chemistry.**—*Elementary Course.*
Class-room 3 hrs. a week, 12:00.
Laboratory 6 hrs. a week.
Mj. Autumn Quarter.
ASSOCIATE PROFESSOR SMITH.

2. **General Inorganic Chemistry.** — Continuation of Course 1. Hours as in 1.
Mj. Winter Quarter.
ASSOCIATE PROFESSOR SMITH.

3. **General Inorganic Chemistry.**— Continuation of Courses 1 and 2. Hours as in 1.
Mj. Spring Quarter.
ASSOCIATE PROFESSOR SMITH.

1, 2, 3 form a continuous course through three quarters.

The lectures and class-room work of 1, 2, and 3 may be taken by Graduate Students without the laboratory work or laboratory fee.

1A. **General Inorganic Chemistry.**— *Elementary Course.* DM. First Term, Summer Quarter.
Lectures 6 hrs. a week; 11:00.
Laboratory work 12 hrs. a week; 2:00–5:00.
ASSOCIATE PROFESSOR SMITH.

2A. **General Inorganic Chemistry.**— Continuation of Course 1A. Hours as in 1A.
DM. Second Term, Summer Quarter.
ASSOCIATE PROFESSOR SMITH.

The lectures and class-room work of 1A and 2A may be taken by Graduate Students without the laboratory work or laboratory fee.

Students offering entrance chemistry do more advanced laboratory work than those not offering it.

Courses 1 and 1A must be preceded by Preparatory (entrance) Physics or its equivalent, including some laboratory work.

The aim of the equivalent continuous Courses 1, 2, 3, and 1A and 2A will be to give a definite idea of the fundamental principles of chemistry, and not to overburden the student with a mass of unconnected facts. The lectures will be experimental to a considerable extent. The courses are designed to meet the wants not only of those who wish to go deeper into chemistry, but of all who wish to secure a liberal education.

1B. **General Inorganic Chemistry.**—*Special Course.*
DM. First Term, Summer Quarter.
Lectures, 6 hrs. a week; 11:00.
Laboratory work, 12 hrs. a week; 2:00–5:00.
ASSOCIATE PROFESSOR SMITH.
Mj. Autumn Quarter.
Class-room 3 hrs. a week, 8:30.
Laboratory 6 hrs. a week. DR. MCCOY.
Prerequisite: *Entrance Chemistry and Physics, 1 unit each.*

2B. **General Inorganic Chemistry.**—*Special Course.* Continuation of Course 1B. Hours as in 1B (Summer).
DM. Second Term, Summer Quarter.
ASSOCIATE PROFESSOR SMITH.
Mj. Winter Quarter. Hours as in 1B (Autumn). DR. MCCOY.

1B and 2B, preceded by 1 unit entrance chemistry, are equivalent to the continuous 3Mj course. This is a special course designed to form a sequel to high-school chemistry. The lecture, laboratory, and recitation work are all distinct from that of Courses 1 and 2. Whenever the preparation justifies it, qualitative analysis (Course 6) may be substituted for 2B.

NOTE.—Two hours of laboratory are reckoned as equal to one hour of lecture work.

4. **Elementary Organic Chemistry.**
Class-room 3 hrs. a week; 8:30.
½Mj. Spring Quarter.
Dr. McCoy.
Prerequisite : *General Chemistry.*

5. **Elementary Organic Chemistry.**
Laboratory course, 6 hrs. a week.
½Mj. Spring Quarter.
Dr. McCoy.

Primarily for the Senior Colleges.

Note.—Courses 6, 7, 8, 9, 10, 11, and 13 are given in the analytical laboratories. The laboratories are open from 8:00 a.m to 6:00 p.m. (Saturdays only to 1:00 p.m.) In the Autumn, Winter, and Spring Quarters, the *hours for instruction* in the laboratories are 2:00 to 5:30 p.m. Mondays to Thursdays, and 9:00 a.m. to 12:30 p.m. Fridays and Saturdays. Students are obliged to take at least two-thirds of the required laboratory work in the time allotted to instruction, and are required *to register for definite laboratory hours* on registering for a course in analytical chemistry.

6. **Qualitative Analysis.**—*Introductory Course.*
Mj or DM. 8 or 16 hrs. a week laboratory.
2 hrs. a week class room. Lectures, 2:00.
Summer Quarter.
Associate Professor Stieglitz
and Dr. McCoy.
Autumn and Spring Quarters.
Dr. Jones.
Prerequisite: *Courses 1, 2, 3,* or *1A, 2A,* or *1B and 2B.*

Courses 6, 7, 10 form a continuous course, which may be begun in the Summer, Autumn, or Spring Quarters.

The aim of Courses 6, 7, 10 will be to train the student to apply and amplify his knowledge of general and physical chemistry and to do intelligent analytical work based on a knowledge of the scientific principles of the subject.

8. **Quantitative Analysis.** —*Introductory Course.*— Chiefly laboratory work in gravimetric and volumetric analysis.
Mj or DM. 8 or 16 hrs. a week, laboratory.
Lecture, 1 hour.
Summer, Autumn, and Winter Quarters.
Associate Professor Stieglitz.
Spring Quarter.
Dr. Jones.
(Mr. Derby or Mr. Shepherd, assisting in the Laboratory.)
Prerequisite: *Qualitative Analysis.*

Courses 8, 9, 11 form a continuous course, which may be begun in any quarter.

Primarily for the Graduate School.

14. **Organic Chemistry.** — Lectures, 3 hrs. a week.
Mj. Autumn Quarter; 12:00.
Professor Nef.
Prerequisite: *General Chemistry and Qualitative Analysis.*

15. **Organic Chemistry.** — Continuation of Course 14.
Mj. Winter Quarter; 12:00.
Professor Nef.

16. **Organic Chemistry.**—Continuation of Course 15.
M. First Term, Spring Quarter; 12:00.
Professor Nef.

Courses 14, 15, 16 form a continuous course, covering the compounds of carbon, including the fatty and the aromatic series. The aim of the course will be to take up very thoroughly the simpler compounds, going with great detail into the chemical behavior, the characteristic reactions and relationships of the different classes of organic compounds, and considering with great care the synthetic methods by which they can be obtained. Richter's or Bernthsen's *Organic Chemistry* is used as a reference book, but recent literature will, in special cases, be considered in detail.

17. **General Organic Chemistry.**—Fatty and aromatic series.
Lectures, 5 hrs. a week.
Mj. (or M. First Term). Summer Quarter ; 8:30.
Dr. Hessler.
Prerequisite : *General Chemistry and Qualitative Analysis.*

18. **Elementary Organic Preparations.**—Laboratory work ; 10 hrs. a week. This course is arranged to accompany the lectures of Course 17. It may be taken without the lectures by students who have had organic chemistry.
½Mj or Mj. Summer Quarter.
Dr. Hessler.
Prerequisite : *As in Course 17.*

19. **The Chemistry and Preparations of Medicinal Drugs.**—Dealing with the origin and the physical and chemical properties of the most important drugs, and their chief medicinal preparations.
Lectures : Wed., Thurs., 11:00.
½Mj. Autumn Quarter.
Professor Haines and Dr. Webster.

19A. **A Laboratory Course,** supplementary to Course 19. Sat., 8:30–1:00.
½Mj. Autumn Quarter.
Professor Haines and Dr. Webster.

19B. **Poisons and their Detection.**—A conference and laboratory course.
1M. Second Term, Spring Quarter; 1903.
Hours to be announced.
PROFESSOR HAINES.

23. **Advanced General Chemistry.** — Causes of and conditions for chemical action. 2 hrs. a week.
½Mj. Autumn Quarter; 8:30.
ASSOCIATE PROFESSOR SMITH.

Prerequisite: *College Physics, General Chemistry, and Qualitative Analysis.*

31. **Theoretical Chemistry.**—With special reference to physical methods. 2 hrs. a week.
½Mj. Summer Quarter; 8:30.
½Mj. Spring Quarter; 8:30.
DR. MCCOY.

Prerequisite: *College Physics and General Chemistry.*

34. **Physico-Chemical Methods.** — Determination of specific gravity, molecular weights, etc.
Laboratory work, 5 hrs. a week.
½Mj. First Term, Summer Quarter.
Repeated in Second Term, Summer Quarter.
½Mj. Spring Quarter.
Prerequisite: As in Course 31.
DR. MCCOY.

35. **The Carbohydrates and the Terpenes** (and their derivatives).
Lectures, 2 hrs. a week.
½Mj. Autumn Quarter; 8:30.
ASSOCIATE PROFESSOR STIEGLITZ.

Prerequisite: *Organic Chemistry.*

See the Departmental Announcements for other courses in Chemistry, suitable for advanced special students in medicine.

XXII. THE DEPARTMENT OF ZOÖLOGY.

OFFICERS OF INSTRUCTION.

CHARLES OTIS WHITMAN, PH.D., LL.D., *Professor and Head of the Department of Zoölogy; Curator of the Zoölogical Museum.*
CHARLES BENEDICT DAVENPORT, PH.D., *Associate Professor of Zoölogy and Embryology; Assistant Curator of the Zoölogical Museum.*
FRANK RATTRAY LILLIE, PH.D., *Associate Professor of Embryology; Assistant Curator of the Zoölogical Museum.*
CHARLES MANNING CHILD, PH.D., *Instructor in Zoölogy.*
WILLIAM LAWRENCE TOWER, *Assistant in Embryology.*
WALLACE CRAIG, S.B., *Assistant in Zoölogy.*
DANA LEWIS GATES, S.M., *Assistant in Zoölogy.*
EDWIN GARVEY KIRK, S.B., *Assistant in Zoölogy.*

CHARLES CHRISTOPHER ADAMS, S.M., *Assistant in Zoölogy* (Summer Quarter, 1902).

FELLOWS.

1902-1903.

CHARLES CHRISTOPHER ADAMS, S.M.
MARION ELIZABETH HUBBARD, S.B.
BENNET MILLS ALLEN, PH.B.
WILLIAM JACOB BAUMGARTNER, S.M.
AXEL LEONARD MELANDER, A.B.

INTRODUCTORY.

In the department are offered (1) courses in General Biology and Comparative Anatomy, which form the foundation for the study of Medicine, and which are strongly recommended to college students preparing to study Medicine (see p. 30, II, 1); (2) a course in Embryology, which is required of all medical students; and (3) advanced and research work for advanced special students.

During the Summer Quarter general courses in Zoölogy will be given at the University, at the Marine Biological Laboratory, Woods Hole, Mass., and at the Biological Laboratory, Cold Spring Harbor, L. I. Provision will also be made for research students at these places.

COURSES OF INSTRUCTION.

Summer Quarter, 1902 – Spring Quarter, 1903.

M=Minor course=a single course for six weeks. DM=Double Minor course=a double course (two hours daily) for six weeks. Mj=Major course=a single course for twelve weeks. DMj=Double Major course=a double course for twelve weeks.

JUNIOR COLLEGE COURSES.

1. **General Zoölogy.**—Lectures and demonstrations dealing with Zoölogical topics from the standpoint of General Biology, such as: the outlines of the classification, distribution, and comparative anatomy of animals in their relation to evolution; animals in their relation to environment; habit and instinct, variation and inheritance, theories of evolution, the evolution of man. Mj. Winter Quarter.

   Lectures: Tues.–Fri., 4:00.

   Laboratory: 2 hrs. on Friday afternoon or Saturday morning.

   ASSOCIATE PROFESSOR DAVENPORT.

   Will be given in the Autumn Quarter in alternate years.

2. **General Biology.**— Lectures and demonstrations dealing with topics of a general Biological nature, such as protoplasm, the cell theory, sex, growth, reproduction, development, the nervous system and sense organs.

   Mj. Autumn Quarter.

   Lectures: Tues.–Fri., 4:00.

   Laboratory: 2 hrs. on Friday afternoon or Saturday morning.

   ASSOCIATE PROFESSOR LILLIE.

   Will be given in the Winter Quarter in alternate years.

SENIOR COLLEGE COURSES.

10. **Comparative Anatomy of Vertebrates.**—Lectures, demonstrations, and laboratory work. The comparative anatomy of Amphioxus, Cyclostomes, fishes, amphibians, and reptiles.

    M or DM. Summer Quarter, Second Term.

    Mj or DMj. Autumn Quarter.

    Lectures: Mon., Wed., and Fri., 9:30.

    Laboratory: Hours arranged with the instructor. MR. TOWER.

    Prerequisite: *Course 1 or 2.*

11. **Comparative Anatomy of Vertebrates** (continued). —Comparative anatomy of birds and mammals.

    Mj or DMj. Winter Quarter.

    Lectures: Mon., Wed., Fri., 9:30.

    Laboratory: Hours arranged with the instructor. MR. TOWER.

    Prerequisite: *Course 1 or 2.*

18. **General and Experimental Embryology.**

    Mj. or DMj. Winter Quarter.

    Hours arranged with the instructor.

    ASSOCIATE PROFESSOR LILLIE.

    Prerequisite: *Courses 1 or 2 and 15.*

20. **Vertebrate Embryology.** — Lectures, demonstrations, and laboratory work. For medical and pre-medical students. Special arrangements are made for more advanced students.

    Mj or DMj. Spring Quarter.

    Lectures: Mon., Wed., Fri., 8:30.

    Laboratory: 6 hrs., mornings.

    ASSOCIATE PROFESSOR LILLIE.

    Prerequisite: *Course 1 or 2.*

NOTE.—Courses 10, 11, and 20 constitute a course in Vertebrate Morphology running through the year, and may well be taken together.

For other courses in this department, see the *Circular of Information: The Graduate Schools*, 1902-3, pp. 92-94.

XXIII. THE DEPARTMENT OF ANATOMY.

OFFICERS OF INSTRUCTION.

LEWELLYS FRANKLIN BARKER, M.B., *Professor and Head of the Department of Anatomy.*
ROBERT RUSSELL BENSLEY, A.B., M.D., *Assistant Professor of Anatomy.*
ALBERT CHAUNCEY EYCLESHYMER, PH.D., *Assistant Professor of Anatomy.*
GEORGE E. SHAMBAUGH, M.D., *Instructor in Anatomy of the Ear, Nose, and Throat.*
PRESTON KYES, A.M., M.D., *Associate in Anatomy.*
DEAN D. LEWIS, A.B., M.D., *Associate in Anatomy.*
DANIEL GRAISBERRY REVELL, A.B., M.B., *Associate in Anatomy.*
BASIL C. H. HARVEY, A.B., M.B., *Assistant in Anatomy.*
——— ——— *Assistant in Anatomy.*

FELLOWS.

1902-1903.

JOHN GORDON WILSON, M.D. LOUIS NEILL TATE, A.B.

INTRODUCTORY.

The general outline of the work provided for in courses is as follows: During the Autumn Quarter, Dissection, Osteology, Histology, and Splanchnology are studied; in the Winter Quarter, Dissection is continued, as are also Histology and Splanchnology; in the Spring Quarter, Neurology and Embryology are offered, and optional courses in Advanced Microscopic Anatomy, Advanced Gross Anatomy, Structure of the Blood, etc., are available. The teaching is chiefly in the laboratory, under direction; but this may be supplemented by demonstrations, lectures, and recitations. During the Summer Quarter courses are offered in Osteology, Histology, and Splanchnology, Histological Technique, Introductory Human Anatomy, Histogenesis, and Organogenesis. Special courses for physicians and advanced students are also offered in the Summer Quarter. These include courses in the Anatomy of the Eye, Ear, Nose, and Throat, and Pelvic Viscera. Opportunities for research are offered every quarter.

COURSES OF INSTRUCTION.

Summer Quarter, 1902—Spring Quarter, 1903.

M=Minor course=a single course for six weeks. DM=Double Minor course=a double course (two hours daily) for six weeks. Mj=Major course=a single course for twelve weeks. DMj=Double Major course=a double course for twelve weeks.

PRIMARILY FOR THE JUNIOR COLLEGES.

00. **Introductory Anatomy.**—A general course in systematic human anatomy adapted to the needs of the beginning student. Practical study of preparations and models in the laboratory. This course is recommended to teachers who have to give instruction in elementary anatomy and physiology in high schools and academies.

M. First Term, Summer Quarter.
Lectures: Mon., Wed., 2:00; Sat., 9:30.
Laboratory: Mon., Thurs., 2:00–5:00.
MR. REVELL.

PRIMARILY FOR THE SENIOR COLLEGES.

These courses count toward the A.M. or Ph.D. degree; for the degree of S.M. they are necessary prerequisites.

1. **Dissection of Arm and Wall of Thorax (Human).***— The student makes a complete dissection of all structures, using atlases and text-books as guides. The work is largely independent. The laboratories for dissecting are open every day from 8:30 A.M. to 5:00 P.M. (Saturdays until 1:00 P.M), during the Autumn and Winter Quarters. A dissection must be completed in the quarter in which it is undertaken.

Mj. Autumn Quarter.
Repeated in Winter Quarter.
PROFESSOR BARKER, ASSISTANT PROFESSORS BENSLEY AND EYCLESHYMER, DRS. KYES AND LEWIS, MESSRS. REVELL, HARVEY, AND OTHERS.

(Laboratory fee, $5.00.)

2. **Dissection of Leg and Abdomen (Human).***—The arrangements for this course are similar to those for Course 1.

Mj. Autumn Quarter.
Repeated in Winter Quarter.
PROFESSOR BARKER, ASSISTANT PROFESSORS BENSLEY AND EYCLESHYMER, DRS. KYES AND LEWIS, MESSRS. REVELL, HARVEY, AND OTHERS.

(Laboratory fee, $5.00.)

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* The time scheduled for Dissection includes not only that for the mechanical work of dissection, but also that for reading upon, drawing, and studying the part. Students are urged to read descriptions from text-books at the cadaver, with the natural forms before them, rather than in their private rooms, where these forms are unavailable. Students completing the part to the satisfaction of their instructors in less time than that scheduled are permitted to dispose of the remaining hours in advanced work in this or other departments, in reading in the library, or in any other way favorable to the progress of their medical studies.

3. **Dissection of Head, Neck, and Thoracic Viscera (Human).***— The arrangements for this course are similar to those for Courses 1 and 2.

Mj. Autumn Quarter.
Repeated in Winter Quarter.
Professor Barker, Assistant Professors Bensley and Eycleshymer, Drs. Kyes and Lewis, Messrs. Revell, Harvey, and others.

(Laboratory fee, $5.00.)

4. **Human Osteology.** — The point of view in this course will be partly comparative, partly embryological. All the bones in the human body will be either drawn or modeled in the laboratory. ½Mj. Autumn Quarter.
Lectures: Mon., 9:30.
Laboratory: Mon., 10:30–1:00; Thurs., 11:00–1:00. Mr. Revell.

4A. **Human Osteology.** — Equivalent to Course 4.
M. First Term, Summer Quarter.
Lectures: Mon., Tues., 8:30.
Laboratory: Mon., Tues., 8:30–1:00.
Mr. Revell.

10. **Splanchnology, Histology, and Cytology.** — A brief course on the cell and elementary tissues will be followed by a thorough study of the various visceral organs. A knowledge of the normal appearance and texture of the organs will be gained by the dissection of fresh specimens, the dissecting microscope being employed to supplement the information gained by ordinary methods of dissection. Finally the compound microscope will be employed in the study of prepared sections. Vessels, ducts, and the natural cavities of organs will be demonstrated by the various methods of injection and corrosion.

½ Mj. Autumn Quarter.
Laboratory: Thurs., Fri., 8:30–12:00.
Assistant Professor Bensley and Assistants.

(Laboratory fee, $2.50 per Mj.)

11. **Course 10** (continued).
Mj. Winter Quarter.
Laboratory: Wed., Thurs., Fri., 8:30–12:00.
Assistant Professor Bensley and Assistants.

(Laboratory fee, $2.50 per Mj.)

10A. **Splanchnology, Histology, and Cytology.**
DM. First Term, Summer Quarter.
Lectures: Wed., Thurs., Fri., 8:30.
Laboratory: Wed., Thurs., Fri., 9:30–12:00.
Assistant Professor Eycleshymer and Assistants.

11A. **Course 10A** (continued).
M. Second Term, Summer Quarter.
Lectures: Thurs. and Fri., 8:30.
Laboratory: Thurs. and Fri., 9:30–12:00.
Assistant Professor Eycleshymer and Assistants.

Courses 10A and 11A together are the equivalent of Courses 10 and 11.

12. **Vertebrate Embryology.**—See Department of Zoölogy, Course 20.

13. **Gross and Microscopic Anatomy of the Human Central Nervous System and Sense Organs.**— See Department of Neurology, Courses 3 and 3A.

PRIMARILY FOR THE GRADUATE SCHOOL.

20. **Anatomy of the Ear, Nose, and Throat.**— Special advanced anatomy for practicing physicians and advanced students. This course will consist of demonstrations of anatomical preparations, lectures, and laboratory work.
DM. First Term, Summer Quarter.
Lectures and Laboratory: Mon. to Thurs., 2:00–5:00. Dr. Shambaugh.

(Laboratory fee, $2.50.)

21. **The Eye.**— Special advanced anatomy for practicing physicians and advanced students.
DM. First Term, Summer Quarter.
Mon.-Thurs., 8:30–12:00.
Professor Barker and Assistants.

(Laboratory fee, $2.50.)

22. **Abdominal and Pelvic Viscera and Pelvic Floor.**— Special advanced anatomy for practicing physicians and advanced students. Suited to those purposing to pay especial attention to gynæcology. DM. First Term, Summer Quarter.
Hours to suit applicants.
Professor Barker and Assistants.

(Laboratory fee, $2.50.)

30. **Advanced Microscopic Anatomy.**— In this course an opportunity will be given to a limited number of suitably prepared students to acquire a

knowledge of the methods of research in microscopic anatomy, and of the original sources of information in the literature of the subject. Especial attention will be paid to cellular microchemistry and to the physiological interpretation of structure. Mj. Spring Quarter.

Laboratory : Fri., 2:00–5:00; Sat., 8:30–12:00.

ASSISTANT PROFESSOR BENSLEY.

Prerequisite : *Courses 10 and 11 or their equivalent.*

31. **Hæmology.**— This course will include instruction in the various methods of examination of the blood, including the counting of the corpuscles, estimation of hæmoglobin, differential count of white cells in dried and stained specimens, studies in hæmolysis, etc.

Mj. Spring Quarter.

DR. KYES.

32. **Histogenesis.**— The changes taking place in the elementary tissues from the blastogenic period to adult life. Certain tissues will be taken as types of the general problems of development, and discussed from this point of view.

M. Second Term, Summer Quarter.

Lectures and Laboratory : Thurs., Sat., 8:30–12:00.

ASSISTANT PROFESSOR EYCLESHYMER.

33. **Organogenesis.** — Structural changes in certain organs in the course of development from the embryonic to the adult form will be studied.

M. Second Term, Summer Quarter.

Lectures and Laboratory: Mon., Wed., 8:30–12:00. MR. REVELL.

Prerequisite for Courses 32 and 33 : *A knowledge of the main facts of Embryology, Splanchnology, and Histology.*

34. **Advanced Histology and Cytology.**—The solution of various problems in connection with tissues and cells will be undertaken. Especial attention will be paid to experimental methods.

Mj. Spring Quarter.

ASSISTANT PROFESSOR EYCLESHYMER.

Prerequisite : *Courses 10 and 11.*

40. **Advanced Work.**— Opportunities are offered for advanced work in all departments of anatomy.

1 to 3Mj.

PROFESSOR BARKER AND OTHERS.

Prerequisite : *Courses 1, 2, 3, 10, 11,* and *Embryology.*

41. **Research Work.**— The laboratory is equipped for the original investigation of anatomical problems. Suitably trained and endowed students or physicians who have the time to undertake such work will be encouraged to do so.

1 to 4Mj.

PROFESSOR BARKER, ASSISTANT PROFESSOR BENSLEY, AND OTHERS.

XXIV. THE DEPARTMENT OF PHYSIOLOGY.

(Including Physiological Chemistry and Pharmacology.)

OFFICERS OF INSTRUCTION.

JACQUES LOEB, M.D., *Professor and Head of the Department of Physiology.*
ELIAS POTTER LYON, PH.D., *Assistant Professor of Physiology.*
ALBERT PRESCOTT MATHEWS, PH.D., *Assistant Professor of Physiological Chemistry.*
DAVID JUDSON LINGLE, PH.D., *Instructor in Physiology.*
MARTIN H. FISCHER, M.D., *Associate in Physiology.*
WALDEMAR KOCH, PH.D., *Assistant in Pharmacology.*
RALPH WALDO WEBSTER, M.D., *Assistant in Physiological Chemistry.*
ARTHUR WHITE GREELEY, A.M., *Assistant in Physiology.*
CHARLES HUGH NEILSON, A.M., *Research Assistant in Physiology.*

WILLIAM DOUWES ZOETHOUT, PH.D., *Assistant in Physiology* (Summer Quarter, 1902).

FELLOWS.

1902-1903.

ORVILLE HARRY BROWN, A.B.
HOWARD PENDLETON KIRTLEY, PH.B.
GEORGE SENN, S.B.

INTRODUCTORY.

The required or minimal work for medical students includes Courses 12, 13, and 14; it is distributed over three quarters, beginning in the Spring Quarter of the first year and extending over the Autumn and Winter Quarters of the second year. Included in the courses mentioned, one to two weekly conferences will be held in which students will have an opportunity to discuss the problems worked out in the laboratory. In these courses special attention will be given to the following points: (1) That the student become familiar with the traditional and classical facts and experiments in Physiology; and (2) that he acquire sufficient knowledge of the recent advances and methods of Physiology to allow him to follow intelligently and accurately the changes necessitated by their probable bearing on medicine. For example, special attention will be given to the application of Physical Chemistry to physiological problems.

The required work in Physiological Chemistry consists of Courses 20 and 25; that in Pharmacology, of Course 21.

For students having finished a year's work in Physiology and wishing to specialize in certain branches of scientific or practical medicine, special quarterly courses are offered. Such courses are: The Physiological Effects of Ions, Physiological Morphology, Theory of Space Sensations, Functions of the Cortex, Comparative Physiology of the Central Nervous System, the Internal Secretions, etc. These courses consist chiefly of laboratory work.

Advanced and Research courses in Physiological Chemistry and Pharmacology are also offered.

COURSES OF INSTRUCTION.

Summer Quarter, 1902—Spring Quarter, 1903.

M=Minor course=a single course for six weeks. DM=Double Minor course=a double course (two hours daily) for six weeks. Mj=Major course=a single course for twelve weeks. DMj=Double Major course=a double course for twelve weeks.

For each Major or Double Minor Course requiring laboratory work, the laboratory fee is $2.50.

JUNIOR COLLEGE COURSE.

1. **Introductory Physiology.**—The aim of this course is to familarize the student with the structure and functions of the human body. Text-book: Martin's *Human Body.* Mj. Summer Quarter.
Dr. Lingle. First Term.
Assistant Professor Lyon. Second Term.
Repeated each quarter at 8:30.
DR. LINGLE.

SENIOR COLLEGE COURSES.

11. **Laboratory Work in Physiology for Teachers.**—Including many experiments requiring little apparatus and suitable for use in High Schools. Mj. Summer Quarter; Wed.-Fri., 2:00-5:00. Conference to be arranged.
ASSISTANT PROFESSOR LYON,
DRS. LINGLE, KOCH, AND ZOETHOUT.
Prerequisite: *A general knowledge of Chemistry, Physics, and Physiology.*

12. **Physiology of Nerves and Muscles, of Circulation and Respiration.** 1½ Mj. Spring Quarter.
Lectures: Mon., Wed., and Fri., 12:00.
PROFESSOR LOEB.
Conferences: Tues., Thurs., 12:00.
ASSISTANT PROFESSOR LYON.
DRS. LINGLE AND FISCHER,
AND MR. GREELEY.
Laboratory: Sec. *a*, Mon., Tues., 2:00-5:00.
Sec. *b*, Wed., Thurs., 2:00-5:00.
ASSISTANT PROFESSOR LYON,
DRS. LINGLE AND FISCHER,
AND MR. GREELEY.
Prerequisite: *XX-1, 2.*
Repeated, Summer Quarter, Second Term, as a DM.
Lectures: Mon.-Fri., 10:30.
DR. LINGLE.
Laboratory: Wed., Thurs, Fri., 1:30-4:30.
Conference to be arranged.
ASSISTANT PROFESSOR LYON
AND DR. ZOETHOUT.

13. **General and Theoretical Physiology.**—Including the Physiology of Metabolism, Absorption, Secretion, and Heat. Mj. Autumn Quarter.
Lectures: Mon.-Wed., 12:00.
PROFESSOR LOEB.
Laboratory:
Sec. *a*, Tues., Thurs., 2:00-5:00.
Sec. *b*, Wed., 9:30-12:00; Fri., 9:30-1:00.
DRS. LINGLE AND FISCHER,
AND MR. GREELEY.

14. **Physiology of the Central Nervous System and the Senses.** Mj. Winter Quarter.
Lectures: Tues., Wed., Thurs., 12:00.
PROFESSOR LOEB.

Laboratory:
Sec. *a*, Wed., 9:30–12:00; Fri., 9:30–1:00.
Sec. *b*, Thurs., Fri., 2:00–5:00.
ASSISTANT PROFESSOR LYON, DRS. LINGLE AND FISCHER, AND MR. GREELEY.

Repeated as a DM, First Term, Summer Quarter.
Lectures: Mon.–Fri., 10:30.
ASSISTANT PROFESSOR LYON.
Laboratory: Wed., Thurs., Fri., 1:30–4:30.
Conference to be arranged.
DRS. LINGLE AND ZOETHOUT.

15. **Special Physiology of Mammals.**—Including the repetition of classical experiments such as those on blood pressure, vaso-motor nerves, localization, with study of the original sources.
Mj or ½ Mj. Winter Quarter; Sat., 8:00–1:00.
Conference to be arranged.
ASSISTANT PROFESSOR LYON AND DR. FISCHER.
Repeated, Spring Quarter.
Prerequisite: *A knowledge of the main facts of Physiology.*

20. **Physiological Chemistry.**—Chemistry and Chemical Reactions of Protoplasm; Chemistry of the Principal Foods, of Digestion and the Digestive Secretions; of Intestinal Putrefaction; of Absorption; of the Blood; of the Tissues and Organs. Mj. Winter Quarter.
Lectures: Mon., Tues.. Wed., 8:30.
ASSISTANT PROFESSOR MATHEWS.
Laboratory:
Sec. *a*, Mon., 9:30–1:00; Tues., 9:30–12:00.
Sec. *b*, Mon., Tues., 2:00–5:00.
ASSISTANT PROFESSOR MATHEWS, DRS. KOCH AND WEBSTER.

Repeated, Summer Quarter, as 1½ Mj. (including Course 25).
Lectures: Wed.–Fri., 11:30.
Recitation: Fri., 8:00.
Laboratory: Wed., Thurs., 8:00–11:30; Fri., 9:00–11:30.
DRS. WEBSTER AND KOCH.

21. **Pharmacology.**
DM. Second Term, Spring Quarter.
Lectures: Mon., Wed., Fri., 12:00.
ASSISTANT PROFESSOR MATHEWS.
Recitations: Tues., Thurs., 8:30.
Laboratory:
Sec. *a*, Mon.–Fri., 2:00–5:00.
Sec. *b*, Mon., 8:30–12:00; Tues., Thurs. 9:30–1:00; Wed., Fri., 9:30–12:00.
ASSISTANT PROFESSOR MATHEWS, DRS. KOCH AND WEBSTER.
Repeated, Summer Quarter, as a Major.
Lectures: Mon., Tues., 11:30.
Recitation: Tues., 8:00.
Laboratory: Mon., 8:00–11:30; Tues., 9:30–11:30.
DRS. KOCH AND WEBSTER.

25. **Physiological Chemistry.**—Chemistry of the Excretions, chiefly of the Urine.
M. First Term, Spring Quarter.
Lectures: Mon., Wed., Fri., 12:00.
ASSISTANT PROFESSOR MATHEWS.
Laboratory:
Sec. *a*, Mon.. Tues., 2:00–5:00.
Sec. *b*, Mon., 8:30–12:00; Tues., 9:30–12:00.
ASSISTANT PROFESSOR MATHEWS, DRS. KOCH AND WEBSTER.

GRADUATE COURSES.

31. **The Physiological Effects of Ions.**
Mj. Autumn Quarter.
Lecture: Thurs., 12:00.
Laboratory: Wed.–Fri., 2:00–5:00.
PROFESSOR LOEB.

32. **Physiology of Space Sensations.**
Mj. Winter Quarter.
Lecture: Thurs., 11:00.
Laboratory: Wed.–Fri., 2:00–5:00.
PROFESSOR LOEB.

33. **Physiological Morphology, and Theory of Tropisms.** Mj. Spring Quarter.
Lecture: Thurs., 12:00.
Laboratory: Wed.–Fri., 2:00–5:00.
PROFESSOR LOEB.

34. **Research Work in Physiological Chemistry.**
Mj or DMj. Throughout the year.
ASSISTANT PROFESSOR MATHEWS.

35. **Research Work in Pharmacology.**
Mj or DMj. Throughout the year.
ASSISTANT PROFESSOR MATHEWS AND DR. KOCH.

36. **The Action of Drugs on Mammals.**—An experimental course to a small number of students only. Mj. Autumn Quarter.
DR. KOCH.

37. **The Physiology of Secretion.**
Mj. Autumn Quarter.
ASSISTANT PROFESSOR MATHEWS.

Lectures, laboratory work, and conference on the physiology of the principal glands.

38. **The Chemistry of Digestion.**—Advanced course. The course will include the isolation of the digestion products of different foods; the isolation of the ferments, and a study of their action; the influence of various substances on the digestive processes. Autumn Quarter.
ASSISTANT PROFESSOR MATHEWS.

Lecture: Wed., 9:30; Laboratory: hours to be arranged.

41. **Seminar.**—Throughout the year.
Thursday, 4:00–5:00.
PROFESSOR LOEB.

42. **Research Work in Physiology.**
DMj. Throughout the year.
PROFESSOR LOEB.

51. **General Physiology** at the Marine Laboratory at Wood's Hole, Mass. Credit is given by the University of Chicago for courses taken at this Laboratory.
DMj. Summer Quarter.
PROFESSOR LOEB AND OTHERS.

XXV. THE DEPARTMENT OF NEUROLOGY.

OFFICERS OF INSTRUCTION.

HENRY H. DONALDSON, PH.D., *Professor and Head of the Department of Neurology.*
JAMES ROLLIN SLONAKER, PH.D., *Assistant in Neurology.*
SHINKISHI HATAI, PH.D., *Research Assistant in Neurology.*
ELIZABETH HOPKINS DUNN, M.D., *Technical Assistant in Neurology.*

FELLOW.

1902-1903.

CHARLES INGBERT, A.B.

INTRODUCTORY.

The courses here offered are intended to furnish an account of the histology, microscopic anatomy, and architecture of the Nervous System such as will be required by Students of Anatomy and those preparing for Medicine or Psychology, and also to give the opportunity both for the investigation of new problems and for a critical discussion of current work in Neurology. Course 3 forms part of the required work in Histology and Microscopic Anatomy for those taking the first two years' work in Medicine. The Neurological Journal Club — open to graduate students — meets every Monday afternoon.

For each Major course requiring laboratory work the laboratory fee is $2.50. For medical students this fee is included in the quarterly tuition fees.

COURSES OF INSTRUCTION.

Summer Quarter, 1902 — Spring Quarter, 1903.

M=Minor course=a single course for six weeks. DM=Double Minor course=a double course (two hours daily) for six weeks. Mj=Major course=a single course for twelve weeks. DMj=Double Major course=a double course for twelve weeks.

1A. **The Architecture of the Central Nervous System.** The construction of the Nervous system is described with a view to explaining the pathways of the nerve impulses within it.
DM. Second Term, Summer Quarter.
Lectures: Mon.–Thurs., 8:30.
Laboratory: 10 hrs. a week.
DR. HATAI AND MR. INGBERT.

1. **The Architecture of the Central Nervous System** = Course 1A. Mj. Winter Quarter.
Lectures: Mon., Tues., 9:30.
Laboratory: Thurs., Fri., 2:00–4:00.
PROFESSOR DONALDSON AND DR. SLONAKER.

Prerequisite: *Microscopic Anatomy.*

2. **The Growth of the Brain and its Physical Characters as related to Intelligence.**

Mj. Spring Quarter.

Lectures: Mon., Tues., 9:30.
Laboratory: Thurs., Fri., 2:00–4:00.

PROFESSOR DONALDSON.

Prerequisite: *Microscopic Anatomy.*

3. **Gross and Microscopic Anatomy of the Human Central Nervous System and Sense Organs.** This is a required course for medical students.

Mj. Autumn Quarter.

Lectures: Mon., Tues., 8:30.
Recitation: Wed., 8:30.
Laboratory: Mon., Tues., 9.30–1:00.

PROFESSOR DONALDSON, DR. SLONAKER, AND ASSISTANTS.

Prerequisite: *Microscopic Anatomy.*

3A **Gross and Microscopic Anatomy of the Human Central Nervous System and Sense Organs** (repeated). See Course 3.

DM. First Term, Summer Quarter.

Lectures: Mon.–Thurs., 8:30.
Laboratory: 10 hrs. a week.

PROFESSOR DONALDSON, DR. HATAI, AND MR, INGBERT.

3B. **The Comparative Histology of the Vertebrate Eye.**—With special reference to the retina.

DM. First Term, Summer Quarter.

Lectures: Thurs. and Fri., 8:30.
Laboratory: 14 hrs. a week. DR. SLONAKER.

4, 5, 6, 7. **Seminar.**—The purposes of the Seminar are threefold:

a) Initiation into the methods of research.

b) The history of the guiding conceptions in Neurology.

c) Discussion of such literature as is too technical for presentation at a general Journal Club.

3½Mj. First Term, Summer Quarter; Autumn, Winter, and Spring Quarters.

2 hrs. a week. Summer Quarter, Fri., 8:30; Autumn and Winter Quarters, Tues., 3:00–5:00; Spring Quarter, Thurs., 3:00–5:00.

PROFESSOR DONALDSON.

Admission to the Seminar is granted only after consultation with the head of the department.

8, 9, 10, 11. **Research Courses.—The Study of Neurological Problems.**

3½Mj. First Term Summer Quarter; Autumn, Winter, and Spring Quarters. Laboratory work. Throughout the year.

PROFESSOR DONALDSON.

Prerequisite: *A knowledge of the main facts of Neurology.*

XXVIII. THE DEPARTMENT OF PATHOLOGY AND BACTERIOLOGY.

OFFICERS OF INSTRUCTION.

LUDVIG HEKTOEN, M.D., *Professor of Pathology and Head of the Department of Pathology and Bacteriology.*
EDWIN OAKES JORDAN, PH.D., *Associate Professor of Bacteriology.*
H. GIDEON WELLS, A.M., M.D., *Instructor in Pathology.*
HOWARD TAYLOR RICKETTS, S.B., M.D., *Associate in Pathology.*
WILLIAM BUCHANAN WHERRY, A.B., M.D., *Associate in Bacteriology.*
————————————, *Assistant in Pathology.*
ERNEST E. IRONS, S.B., *Assistant in Bacteriology.*
MARY HEFFERAN, A.M., *Curator of the Bacteriological Museum.*

FELLOWS.

1902–1903.

SAMUEL CHARLES EMLEY, A.B., M.D. (Bacteriology).
MOSES MILTON PORTIS, S.M., M.D. (Pathology).

INTRODUCTORY.

The courses offered by the department include such as cover the required work in Pathology and Bacteriology in the curriculum of the first two years in the study of medicine, as well as advanced courses arranged for those desiring a more extended knowledge of the subjects, and for those wishing to qualify themselves for research.

The Department possesses all necessary equipment for pathological and bacteriological work; abundant desk-room, with lockers, provided; there is a good museum for teaching purposes, and a fairly ample special library containing complete files of the important serials. Sufficient material and apparatus for advanced work and special research are provided.

For each Major or Double Minor Course requiring laboratory work the laboratory fee is $2.50.

COURSES OF INSTRUCTION.

Summer Quarter, 1902—Spring Quarter, 1903.

M= Minor course=a single course for six weeks. DM=Double Minor course=a double course (two hours daily) for six weeks
Mj=Major course=a single course for twelve weeks. DMj=Double Major course=a double course for twelve weeks.

SENIOR COLLEGE COURSES.

1. **General Bacteriology.**—General aspects of Bacteriology. Laboratory practice in the essentials of bacteriological technique. Mj or DMj.
Sec. *a*, Autumn Quarter.
Sec. *b*, Winter Quarter.
Lectures: Thurs., Fri., 8:30.
Laboratory: Mon.–Thurs., 2:00–4:00; Fri., 2:00–3:00.
ASSOCIATE PROFESSOR JORDAN,
DR. WHERRY, AND ASSISTANTS.
Mj or DMj. Summer Quarter; 2:00–5:00.
DR. WHERRY.

2. **General Pathology and Pathological Histology.** A laboratory course in general pathologic histology, supplemented by experiment, by lantern demonstrations, and by the study of fresh and museum specimens, by recitations in general pathology, and by lectures.
1½Mj. Spring Quarter.
Recitations: First Term, Tues., Wed., Fri., 8:30.
Second Term, Wed., Fri., 8:30.
Laboratory: Sec. *a*, Mon., 8:30–12:00; Tues., Thurs., 9:30–1:00; Wed., Fri., 9:30–12:00.
Sec. *b*, Daily, 2:00–5:00.
PROFESSOR HEKTOEN, DRS. WELLS
AND RICKETTS, AND ASSISTANTS.
Repeated in Summer, Autumn, and Winter Quarters.
Prerequisites: *Histology and Bacteriology.*

3. **Lectures in General Pathology.**
½Mj. Spring Quarter.
PROFESSOR HEKTOEN.

4A, 4B, and 4C. **Advanced Bacteriology.**
Mj. Autumn, Winter, and Spring Quarters.
Lectures on immunity and infection are given in connection with Course 4B.
ASSOCIATE PROFESSOR JORDAN
AND DR. WHERRY.

5. **Public Hygiene.**—The applications of Bacteriology to municipal hygiene. Water supply, food supply, sewage disposal, etc. Mj. Spring Quarter.
ASSOCIATE PROFESSOR JORDAN.

6. **Public Health Laboratory Methods.**—Bacterial diagnosis of infectious material—tuberculosis, diphtheria, typhoid fever. Chemical, bacterial, and microscopic examination of water, milk, ice, food, etc. Mj. Spring Quarter.
MR. IRONS.

GRADUATE COURSES.

10. **Research in Pathology.**—Open to a limited number of specially qualified students and graduates in medicine. Mj or DMj. Each Quarter.
Hours arranged for each student.
PROFESSOR HEKTOEN AND DR. WELLS.

11A, 11B, 11C. **Research in Bacteriology.**
Mj or DMj. Autumn, Winter, and Spring Quarters. ASSOCIATE PROFESSOR JORDAN.

THE DEGREES OF S.B., A.B., AND PH.B.

I. MEDICAL WORK IN THE COURSES FOR THE BACHELOR'S DEGREES.

The first two years' work in medicine consists almost entirely of courses in pure science, which are open as electives to all candidates for a bachelor's degree at the University, who have had the necessary preliminary work in science.

Medical Work in the Course for the Degree of the Bachelor of Science.—A student who has completed the work of the Junior College of Science (two years) at the University or the second year at a college of good standing, and whose credits are accepted as a full equivalent of the corresponding courses at the University, may enter the Senior College (first year) at the University and take the first two years' work in medicine as the third and fourth year of his bachelor's course; and, provided he also takes the specified required courses (three courses in History and Philosophy) of the Senior College of Science, either in an extra quarter or as extra work during three quarters, he may receive the degree of S.B. on the completion of the second year's work in Medicine.

For the completion of the required work for the degree of S.B. and of the first two years in medicine, a student will need, altogether, from four years to four and a quarter after entering the Junior College (Freshman year), or from two years to two and a quarter after entering the Senior College (Junior year), depending on the amount of work he carries per quarter.

Candidates for the S.B. degree who intend to study medicine are strongly advised to take in their first two years at college (Freshman and Sophomore years) a large amount of work in Physics, Chemistry, and Biology, as giving the best foundation for the study of medicine (see below recommended course of study for students preparing to study medicine.)

Medical Work in the Course for the Bachelor of Arts or Philosophy.—A student who has completed the work of the Junior College of Arts or Philosophy (two years) at the University of Chicago or the Sophomore year at a college of good standing, whose credits are accepted by the University as a full equivalent of the corresponding courses, may enter the Senior College (first year) at the University and take from one to one and a half years' work in medicine as part of his bachelor's course and, provided he also takes the required work of the Senior College of Arts or Literature (four courses), receive the degree of A.B. or Ph.B. on the completion of two years' work in college. The remainder of the medical work of the first two years may be taken after graduation and with all the privileges of graduate students.

For the completion of the required work for the degree of A.B. or Ph.B. and of the first two years, work in medicine a student will need from four and a half to five years after entering the first year of the Junior College, or two and a quarter to three years after entering the Senior College (Junior year) of the University of Chicago.

Candidates for the A.B. or Ph.B. degree who intend to study medicine are strongly advised to take in their first three years at college a large amount of work in Physics, Chemistry, and Biology as giving the best foundation for the study of medicine (see below, recommended course of study for students preparing to study medicine).

For information in detail regarding the requirements for the bachelor's degrees at the University of Chicago see the Circular of Information for the Colleges.

II. COURSE OF COLLEGE STUDIES RECOMMENDED FOR STUDENTS PREPARING TO STUDY MEDICINE.

1) The College studies which are recommended for students preparing to study medicine are as follows:* **English, 3 Majors; French or German, 3 Majors** (a reading knowledge in each language must be obtained from these courses and those offered for admission to College); **Mathematics, 2 Majors; History, 2 Majors; Philosophy, 1 Major** †; Physics, 3 Majors; Chemistry, 5 to 6 Majors: General Chemistry, Qualitative Analysis, Organic Chemistry; General Biology, 1 Major; Comparative Anatomy, 1 or 2 Majors.

These twenty-one (21) to twenty-four (24) Majors will require seven (7) to eight (8) quarters for completion. The History and Philosophy, or part of the Chemistry or Biology, may be taken during the time that the student is doing his first two years' work in medicine.

2) For students who wish to devote three years in college in preparing for medicine before entering on medical work proper, the following courses are

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*The required courses for the S.B. degree are given in **bold-faced type**; the courses recommended to be chosen as electives are given in common type.

† Latin (3 Majors) is required if only two units of Latin have been offered for admission to college.

recommended for the choice of additional electives: Greek, 3 Majors; Calculus, 1 Major; Elementary Botany, 1 Major, Course 1; General Morphology of Thallophytes, 1 Major, Course 7; Introductory Physiology, 1 Major, Course 1; Physical Chemistry, 1 Major, half-Major Courses 31 and 32 or Course 23; Quantitative Chemical Analysis, 1 Major, Course 9; Physiography, 1 Major.

REQUIREMENTS FOR GRADUATION IN RUSH MEDICAL COLLEGE.

(IN AFFILIATION WITH THE UNIVERSITY OF CHICAGO)

The following are the requirements for the degree of Doctor of Medicine:

The candidate must not be less than twenty-one years of age, and must have studied medicine for four years. He must have paid all dues, must have complied with all the requirements, and must have maintained unexceptional conduct while at the College.

He must have attended twelve full quarters or an equivalent amount of time in a recognized medical school, of which at least the last three quarters must have been in this institution, and forty-five months must havs elapsed between the beginning of his first course of medical lectures and the date of his graduation.

He must have completed, successfully, all of the work required, as follows:

Eighteen Majors of work in the Freshman and Sophomore years, comprising a minimum of 5 Majors in Anatomy, including gross, and microscopic Anatomy, Human Dissection (one lateral half of the human body), Neurology, and Embryology; 3½ Majors in Physiology, including Physiological Chemistry; 2 Majors in Chemistry; 1 Major in Pharmacology; 2½ Majors in Pathology, including Bacteriology; 4 Majors additional work in one or more of these departments of his choice.

He must pass a final examination in 1) Anatomy (including Embryology and Neurology), 2) Physiology (including Physiological Chemistry and Pharmacology), and 3) Pathology (including Bacteriology). This examination may be taken at the end of the second year, of his medical course, or at any subsequent time previous to the last quarter of his medical course.

Twenty-two Majors of work in the Junior and Senior years, comprising a minimum of 1½ Majors in Therapeutics and Preventive Medicine; 1 Major in Pathology; 4 Majors in Medicine; 5 Majors in Surgery; 3 Majors in Obstetrics and Gynecology; 1½ Majors in Diseases of the Chest, Throat, and Nose; ½ Major in Diseases of the Eye and Ear: ½ Major in Skin and Venereal Diseases; 5 additional Majors in any branch or branches of his choice.

He must have passed, successfully, a final examination, both written and practical, in 1) Medicine, 2) Surgery; 3) Obstetrics, and 4) one of the following branches, chosen by him: *a*) Gynecology, *b*) Diseases of the Chest, Throat, and Nose, *c*) Ophthalmology and Otology, or *d*) Skin and Venereal Diseases.

FELLOWSHIPS AND SCHOLARSHIPS.

1. *The University Fellowships.* The University appropriates annually the amount of twenty thousand dollars ($20,000) for Fellowships in the Graduate Schools. These Fellowships are awarded by the Trustees upon the recommendation of the President and the nomination of a particular department. Each year about seventy fellowships are assigned, ranging in individual value from $120, or the tuition fees of a student for three quarters, to $520.
2. *Applications for Fellowships.* Applications for fellowships should be addressed to the President of the University, *and should be in his hands on or before February 15.*
3. *Appointments to Fellowships.*
    1) *Date.* The annual assignment of fellowships is made at the Spring Convocation in the middle of March. A fellowship is available for any three of the four quarters beginning with the Summer Quarter following the date of appointment.
    2) *Attainments Required.* The candidate must have attained proficiency in some department. In general he should have spent at least one year in resident study after receiving his Bachelor's degree. In making the appointment special weight is given to theses indicating the candidate's ability to conduct original investigation.

4. *Special Fellowships.* In addition to the regular University Fellowships mentioned above, there are special Fellowships offered by individuals. These vary somewhat in number and amount from year to year. At present they are as follows:

   1) The *William A. and Fanny C. Talcott Fellowships and Scholarships.* In 1896 Wm. A. Talcott, of Rockford, Ill., endowed four Fellowships and Scholarships, two of which bear his name and two the name of his wife, Fanny C. Talcott. They are intended primarily for the benefit of graduates of the Rockford College, but in the absence of such beneficiaries may be assigned to others. They pay the tuition fees of those appointed to them.

   2) The *Bucknell Fellowship,* yielding $400, offered by Mr. Charles Miller, Franklin, Pa., is open to graduates of Bucknell University. The appointment to this fellowship is made by the faculty of Bucknell University.

   3) The *Joseph B. Loewenthal Fellowship in Chemistry* endowed by Mr. Berthold Loewenthal of Chicago as a memorial of his son Joseph B. Loewenthal. It yields about $420 to the incumbent annually appointed, and is awarded on the nomination of the Department of Chemistry and the recommendation of the President of the University.

5. *Graduate Scholarships.* The Scholarships available for students in the Graduate Schools are as follows:

   1) *Scholarships for Excellence in the Work of the Senior Colleges.* The University offers twenty Scholarships for excellence in the work of the Senior Colleges. The scholarships are assigned annually, in the Spring Quarter, on the nomination of the Administrative Board of the Senior Colleges. Each department of the University, with the approval of the Committee on Scholarships, has the privilege of naming a student who is for that year the honor student of the Senior Colleges in that department, and to this student there is given a Graduate Scholarship yielding in each case a sum equal to the University tuition fees for three quarters ($120), provided the student continues his studies in the Graduate Schools.

   2) *The William A. and Fanny C. Talcott Fellowships and Scholarships.* See under Fellowships.

   3) *Affiliation Scholarships.* Under the conditions of affiliation with Kalamazoo College, Des Moines College, Butler College, and John B. Stetson University, the three students who stand highest in scholarship and general excellence in each graduating class are awarded scholarships covering the University tuition fees for three quarters ($120). Under this arrangement the University offers:

      Three Scholarships to graduates of Kalamazoo College.

      Three Scholarships to graduates of Des Moines College.

      Three Scholarships to graduates of Butler College.

      Three Scholarships to graduates of John B. Stetson University.

   4) *Scholarships for Teachers in Affiliated Schools,* Under the conditions of affiliation teachers in the various Affiliated Schools of the University are assigned Scholarships covering the tuition fee. The conditions under which these Scholarships may be obtained will be mailed on application.

   5) *Scholarships for Public Speaking.*—Three Scholarships, each yielding the amount of thirty-five dollars ($35) toward the tuition fee for a quarter, are awarded the winners in the preliminary contests in public speaking. In case the winner in a preliminary contest has previously secured a scholarship in this way in the Graduate Schools, the award is made to the second in rank.

   6) *Scholarships for Officers.*—Forty Scholarships, each yielding the tuition fees for three quarters ($120), are assigned annually to members of the faculties, or wives of members, who may desire to take courses of instruction in the University.

FELLOWSHIPS, HOSPITAL INTERNES, AND PRIZES.

(RUSH MEDICAL COLLEGE.)

FELLOWSHIPS.

The following Fellowships, each yielding an income of four hundred dollars annually, are awarded each year: one in chemistry, two in pathology, one in medicine, and one in surgery.

The fellowships are awarded to graduates in medicine recognized as in every way best qualified for the positions. Each Fellow devotes the year succeeding his appointment to original investigation under the direction of the professor of the department in question in the laboratories of the College. He is required to devote some time of each day in the College year to the instruction of students, and has opportunity to attend the clinics and pursue other lines of collegiate study.

HOSPITAL INTERNES.

Positions as internes, through a competitive examination held by the respective hospital staffs, are open each spring to graduates of Rush Medical College in the following Chicago hospitals: the Presbyterian, the Cook County, the Michael Reese, the St. Joseph's, the St. Elizabeth's, the St. Luke's, the Augustana, the Chicago, the Alexian Brothers', the Passavant, the Chicago Policlinic, the German, the Norwegian, the Illinois Charitable Eye and Ear Infirmary, the Baptist, St. Anthony's, the Swedish, the Chicago Maternity, and in a much larger list of institutions outside of the city of Chicago which make appointments from the roll of qualified students of the Senior class in Rush Medical College.

The occupants of these positions receive their board and lodging, and acquire experience in every department of practical medicine and surgery.

PRIZES.

THE BENJAMIN RUSH PRIZE.

A medal of the value of fifty dollars is given by the Faculty at each Commencement to that member of the graduating class who passes the highest examination in every department of medicine represented that year in the examination for the degree.

THE DANIEL BRAINARD PRIZE.

A medal is annually given by the Faculty to the student who makes and presents to the College Museum the best accepted dissection in Surgical Anatomy.

THE FREER PRIZES.

These prizes are derived from the income of a fund presented to the College by the late Nathan M. Freer, of the Board of Trustees, as a memorial of the names of two honored members of his family long identified with the highest interests of this institution.

The J. W. Freer Medal is awarded as a first prize to that member of the Junior class who presents the best written essay on one of the themes annually announced for competition to that class. A second prize is awarded to the next successful competitor. The three subjects from which selections may be made, one of which only can be chosen by each competitor, are announced to the class early in the collegiate year, the essays being submitted to the Faculty on the first of the ensuing April. The subjects for competition for the session of 1902–3 will be given by the Department of Surgery.

The L. C. P. Freer Medal is offered for the year 1902–3 as a first prize to that member of the Sophomore class who presents the best essay on any subject connected with anatomy. Students should consult the professor of Anatomy in regard to selection of topic for this prize. A second prize is awarded to the next most successful of the competitors. *This prize will be competed for by students in the medical course of the University.* The essays are required to be placed in the hands of the Faculty by April, 1903.

THE EDWARD L. HOLMES PRIZE.

In honor of the late Edward L. Holmes, for many years the professor of Diseases of the Eye and Ear in Rush Medical College, and for several years its president, and who during his long career rendered distinguished services to the institution, the trustees have established the EDWARD L. HOLMES prize for original research, to consist of a table and scholarship for one season, at the Marine Biological Laboratory at Woods Hole, Mass.

This prize is offered in recognition of the great service which is rendered to the medical sciences by research work in biology. The prize will be offered each year to members of the Junior class, and will be awarded for the best piece of work in original research performed in any of the laboratories of Rush Medical College. The recipient of the prize will defray his personal expenses.

THE DELASKIE MILLER PRIZE.

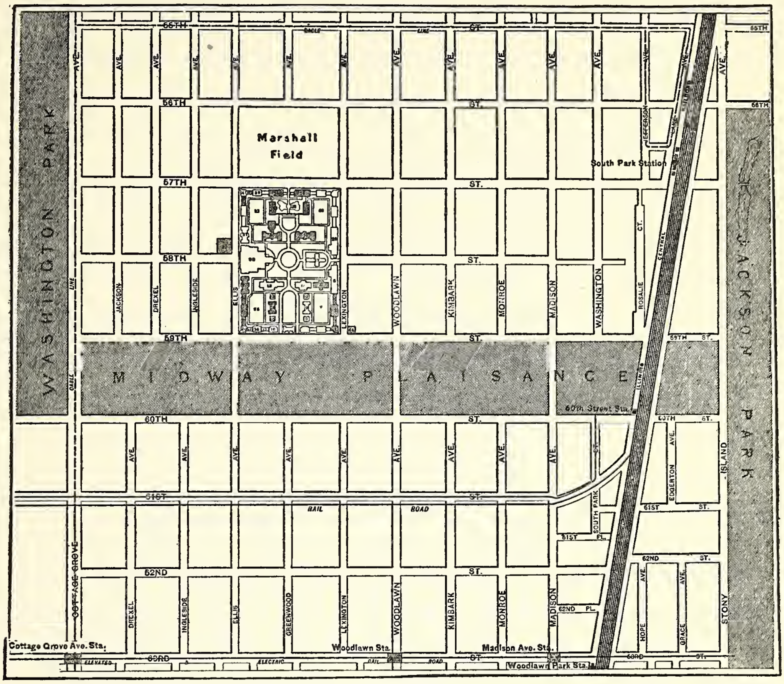
This prize is annually given to the student who does the best work in obstetrics and gynecology.

MEDICAL SOCIETIES.

The fact that a very large number of medical men practice in Chicago has led to the development of a number of medical societies, general and special. Among the more interesting to medical students in the early years of their course is the Chicago Pathological Society. A large number of clinical societies, notably the Chicago Medical Society and its various branches, will interest the student particularly in the later years of his course.

The University of Chicago Medical Club meets on the first and third Monday evenings of each month in the amphitheater of the Kent Chemical Laboratory at 8:15 sharp. At the meetings of this society the advanced work and original research of the various laboratories will be reported, and topics of general medical and scientific interest will from time to time be discussed. The meetings will be open to medical students. The society holds no meetings during the Summer Quarter.

MAP OF THE IMMEDIATE VICINITY OF THE UNIVERSITY.



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THE UNIVERSITY RECORD

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THE UNIVERSITY OF CHICAGO

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JULY, 1902

MEDICINE AND THE UNIVERSITIES.[1]

By LEWELLYS F. BARKER, M.B.
The University of Chicago.

I wish to spend the time you have courteously allotted to me tonight in making a plea for the better organization and endowment of the medical departments of universities. If you will permit me to refer in a few words to the character of the medical schools of the past, and to outline to you some of the features of the medical schools of the present, I shall be the better able to make clear to you my opinion regarding some of the needs of the medical school of the future.

THE PASSING OF THE PROPRIETARY MEDICAL SCHOOL.

The majority of the medical schools in America have developed as proprietary medical schools. Usually a group of medical men, centering in one strong personality, formed a combination with two objects in view: the education of young men in the medical art, and the self-improvement and the advancement of their own standing in the profession and with the public. The course of instruction, brief at first, was gradually extended to two years and then to three. In most schools it is now four years. The graded course was a relatively late feature. For many years only one course of lectures was given in the school. This course was repeated each year, so that if a student who attended all the lectures in his first year, came back for a second or a third year, he listened to the same lectures over again. The introduction of the graded course by the Chicago Medical College (now the Medical Department of Northwestern University) was therefore a distinct step forward. The division of labor among the instructors became more marked, and the corps of instructors was correspondingly increased. The necessity, on the part of the student, for a grounding in subjects like anatomy and physiology previous to clinical work became apparent. Chemistry, histology, materia medica, and pathology were subsequently added to the preliminary training, though the latter subject was taught for a long time chiefly in connection with the clinical work.

There were no requirements of preliminary education for the students, or, if any, merely nominal ones. Many of the proprietary schools, whose whole income was derived from the fees of students, were able to pay all their expenses, and to have besides a handsome surplus at the end of each year for division among the members of the staff. And aside from the profits of the school itself, official connection with the staff of a medical school came to be of distinct financial value to the practicing physician or surgeon. The public, naturally, employed practitioners who were teaching in the medical schools. Also, young graduates of the medical school who got into difficulties in their own practice, usually called into consultation their former professors. So valuable, indeed, became this connection that some of the incorporated medical schools took advantage of the opportunity in an interesting way: the members of the corporation would agree to admit a practitioner to the teaching staff on payment of a certain sum of money. The cost of a professorship varied, of course, with the situation of the school, and its standing in the community. I am informed that professorships may still be purchased in some of our medical schools, and that they are valued at as much as several thousand dollars per chair. The demand for chairs in such schools has been so great at times, that a corporation could choose the better men among the applicants.

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[1] An address delivered at the meeting of the Western Alumni of the Johns Hopkins University, held at Chicago, Feb. 28, 1902.

As long as the teaching in the medical schools was purely demonstrative, the cost of medical education was at a minimum. Anatomy was the first subject to be taught other than in a demonstrative way. For, as anatomical material became more plentiful, students dissected for themselves. The material was not, however, expensive, and the laboratories were of so crude a nature that very little money was expended on the workshop. The clinical teaching, done in hospitals and outpatient clinics — usually public institutions — cost the corporation nothing. Students, perhaps, were required to pay a hospital fee. The hospitals did not belong to the medical schools, and it was accordingly necessary to include in the medical faculty those physicians and surgeons who had been fortunate or clever enough to secure appointments in the hospitals and dispensaries. Where these clinical institutions were in the hands of politicians, the best practitioners were not always on the staff.

When the microscope became an important factor in medical education in Europe, American students who had gone abroad for postgraduate instruction came back full of enthusiasm for microscopic work, and began instruction in the use of the instrument in histology and pathology. It was very soon recognized that the medical school must offer extensive courses in normal and pathological histology. This addition necessitated more than simple demonstration of microscopic preparations, although the instruction began in this way. It was soon found that the students must themselves do work with the microscope, and this, since laboratories in which microscopic work could be given, and the microscopes and their accessories, were expensive, involved a large increase in the budget. In addition, students doing such work require a great deal of personal attention, much more than the short time given by instructors under the lecture system. And as very few practitioners had had the opportunity of perfecting themselves in microscopic technique the services of the men qualified to teach it were at a premium. Indeed, the demand became so great that certain men undertook especially to fit themselves for such work. The schools which offered the best facilities in laboratory work attracted the most students, and so competition to excel in this direction arose among the proprietary schools. Pathological anatomy and histology now became important subjects, and at about the same time experimental physiology developed, so that it, with the other two, had to be given prominent places in the curriculum. With the advent of Pasteur's discoveries and Koch's researches bacteriology sprang suddenly into favor; and laboratories fitted out with thermostats, culture tubes, and oil-immersion lenses were everywhere demanded.

But this necessary laboratory instruction in physiology, histology, pathology, and bacteriology made such demands upon the students that those without previous experience in chemistry, physics, and biology were seriously handicapped. And since the standard of admission to medical schools was very low, the students rarely entered with such training; so that the medical schools themselves were compelled to try to teach at least some of these subjects in the first year of medicine.

The proprietary medical schools thus found themselves in a dilemma; for the enormous cost which accompanied these changes in the curriculum, not only reduced the surplus, but wiped it out altogether, and, by those who introduced them, rapidly increasing deficits had to be faced. The fees of students in these schools were found utterly inadequate to supply the money which the rapid change in teaching made desirable. Some relief had to be sought. Endowment for proprietary medical schools could scarcely be hoped for. The only relief, apparently, lay in a combination of the medical school, or at least a part of it, with the scientific departments of a university which received government aid or had private endowment. And so, between the proprietary schools and such universities, various arrangements were entered into. Sometimes a medical faculty was established in the university; sometimes an affiliation was agreed upon. In some schools, the chemistry, physics, and biology were taught in the university, all the other subjects remaining in the medical school.

Today, however, it is regarded as imperative by medical educators capable of forming sound judgments that anatomy, physiology, pathology and bacteriology, physiological chemistry and pharmacology be taught on a university basis; for each of these subjects requires the service of men who have made it their lifework. The kind of instruction which has to be given makes large demands upon the teacher's time; indeed, a conscientious teacher of one of these fundamental sciences in a department of a university sometimes finds it difficult to get a sufficient amount of time to undertake research. Thus it has gradually come to pass that, in the better medical schools, those who teach the subjects mentioned no longer engage in the practice of medicine, but devote all of their time and strength to the teaching and investigation of the sciences which they represent.

THE PSEUDO-UNIVERSITY SCHOOL.

The consent of a certain number of the universities to undertake the instruction of medical students in some of, or, in some places, all of the sciences fundamental to medicine having been gained, there speedily ensued such an enormous improvement in medical instruction in these institutions that the desirability of the move became quickly and widely recognized, and this not only by the medical profession, but by prospective students and by the public at large. The success of the schools combined or affiliated with the larger and better managed universities has been so pronounced that most proprietary schools having no such connection have tried everywhere to enter into some such arrangement. In certain instances it cannot be denied that medical schools have sought rather the prestige of the connection than any material improvement in the courses of instruction. They are no more to blame perhaps than are the universities that have been willing to receive them as their medical departments. It is unfortunate that we have a number of institutions in this country, designated as "universities," which are almost entirely devoid of university conceptions and ideals—indeed, are unworthy even of companionship with the better class of colleges and seminaries. In spite of the fact that medical educators are unanimous in the opinion that adequate medical instruction cannot possibly be given when the fees of students alone are available as a budget, some of the poorer universities, and occasionally some of higher rank, have been willing to undertake the responsibility of medical faculties, provided they did not cost them anything financially, or only a relatively small sum. In these schools even the anatomists, physiologists, and pathologists are men who have not had extended special training, who give instruction chiefly by lectures and quizzes, who make no contributions of importance to the sciences they unworthily represent, and who, engaging in private practice, devote only a part of their time and interest to the medical school. Such medical schools I should designate "Pseudo-university schools."

The proprietary school, however, did excellent work in its day. Magnificent examples of self-sacrifice are to be met with in the records of the faculties of such schools. Especially when the demands of advancing science increased the cost of medical education, do we find in them notable instances of generosity and unselfishness. When deficits began to appear, members of the faculty, instead of drawing salaries, recognizing what the school had done for them in increasing their practice and reputations, and having the welfare of medical education at heart, mulcted their own pockets to make the sheets balance. But now the period of usefulness of the proprietary school of medicine has gone. The conditions are such that its continuance is a menace rather than a help to the community. Though a very large number of such schools are in existence, and students still flock to them in crowds, their death-knell has been sounded; their power and influence are on the wane, for the weight of enlightened, professional, and public opinion is bearing heavily upon them. The pseudo-university schools are worse than the proprietary schools, for they are proprietary schools in disguise.

THE SEMI-UNIVERSITY SCHOOL.

There is a third class of medical schools in existence at the present time; it includes the six or eight best medical schools in the United States. This class I shall designate as that of the semi-university school. By this I mean schools in which the subjects of the first two years are taught in the university, by university professors who do not engage in the private practice of medicine, but who give their whole time and energies to the teaching and investigation of the sciences which they represent. The laboratories of anatomy, physiology, pathology, etc., are installed in the same way as are the laboratories of physics, chemistry, zoölogy, and botany. The professor and his assistants, running careers in these departments, are paid on the same scale as, or, on account of the difference in ratio of supply and demand, a little more liberally than, are the professors and assistants in the other science laboratories of the university.

Generous sums have been provided in the better universities for laboratory furnishings and apparatus, models, books, and other kinds of equipment. The fees of students are not even adequate to defray the annual running expenses, entirely aside from the cost of initial installation, in the departments of the first two years.

The results of making anatomy, physiology, and pathology true university departments have been most satisfactory. Students are now able to obtain a thorough scientific training in these branches fundamental to clinical work. Formerly clinicians complained that the medical students came to them utterly unprepared as regards the structure and functions of the normal body and almost totally ignorant of the changes which take place in disease. Now, students accustomed to the well-regulated, thoroughly organized, rigorous work of the laboratories on approaching the clinical work sometimes complain of a lack of system in the teaching, of unsuitable arrangement of studies, of imperfect adjustment between departments, of insufficient attention to sequence of subjects, of unwarrantable waste of time. In some institutions the students may even admit that an occasional clinical professor does not appear to be as familiar as he should be with the trend of modern work in anatomy, physiology, physiological chemistry, and pathology.

Especially gratifying as a result of the change made by the semi-university school have been the consequences for productive scholarship. Instead of the sterility which characterizes the departments of anatomy, physiology, and pathology when they are manned by private practitioners, in the semi-university schools they have become beehives of industry, centers of original investigation. The last decennium has seen the birth of an American *Journal of Experimental Medicine*, an *American Journal of Physiology*, an *American Journal of Medical Research*, and an *American Journal of Anatomy* — five scientific journals in which the contributions are rigidly limited to the publication of the results of original research!

The departments of the last two years, whether nominally included in the university or not, are unfortunately situated entirely differently in these semi-university schools. All of the men who teach in these departments, or at least the majority of them, are men who are engaged in the private practice of medicine, surgery, obstetrics, or some one of the specialties. The schools provide lecture-rooms, sometimes an outdoor clinic, and in the better ones, clinical laboratories. In some of the schools a few of the younger men, especially in connection with the clinical laboratories, or as assistants to the professors, are paid to give their whole time to the institution, and do not engage in practice. The professors themselves, however, are either not paid at all, or are paid small sums, almost always less than the remuneration which pertains to a university chair, and almost always too little to provide the professor with a living income. These professors are often successful private practitioners, however, and make incomes varying from five to twenty-five thousand dollars per year, or even more. Again, the universities seldom own hospitals. Or, if they have hospitals, they are, as a rule, small and totally inadequate to provide the clinical facilities necessary for the number of students taught. The professors in medicine, surgery, and obstetrics usually have sufficient personal influence, or the school itself is influential enough to permit them to utilize for teaching purposes the wards of various charity hospitals. The hospitals thus utilized have nearly all been built for a specific purpose, namely, to provide beds and treatment for charity patients in the cheapest possible way. The majority of them are political institutions, with all the faults of administration thereto pertaining. Even where the hospitals are privately endowed, as long as the management is not in the hands of the university itself, innumerable and often previously inconceivable difficulties are put in the way of clinical teachers. Continuity of service, for instance, is rarely possible, and such a thing as a graded staff, directly responsible to each professor — an arrangement absolutely indispensable for satisfactory clinical work — is almost unknown.

It is obvious that, if those who teach the clinical subjects have to make their living from private practice, they will be compelled to direct their activities so as not to interfere with that practice. When one considers the amount of time and energy which the patients of a successful city practitioner use up, when one remembers the large bibliography in English, French, and German, relating to the clinical branches, which must be waded through weekly and monthly to keep pace with one's subject, and when one thinks of the discouraging conditions in the hospitals in which these clinicians are compelled to visit, he is forced to marvel at the excellent work which is daily being accomplished, at the closeness in touch with the progress of their subject maintained by the more strenuous of these men, and at the fact that some of them, in spite of all these unfavorable circumstances, actually make contributions to the advance of science by their original work. It says much for the energy and character of the men who are attracted by clinical medicine, surgery, and obstetrics in this country. If so much can be accomplished under such adverse circumstances, what might not be done by such men if the subjects of the last two years were placed upon a real university basis? I should like to see what the result would be if men with these capacities were bred to university careers, were placed in charge of hospitals especially constructed and endowed for university purposes, and were sufficiently paid to permit them to give up private practice entirely and to devote their whole time and strength to teaching and investigating in such hospitals.

A REAL UNIVERSITY SCHOOL.

If one attempts to portray the characters of a school of medicine developed throughout according to true university ideals, he will find it necessary to depict conditions which, as yet, exist nowhere in completeness. In an ideal modern university an essential feature is the combination of the *academia* with the *schola*. The university must be a center of original research, as well as a place of instruction. An institution which attempts no more than the imparting of knowledge already acquired to its students, is not worthy of the name of university. It is merely a college or seminary. A true university is made up of a group of scholars who are not only familiar with the results of previous investigations, but who, endowed with unusual capacities and skilled in the methodology of their respective sciences, invade new territories, searching diligently for new facts. Methods already devised are used when they are sufficient; new methods are invented where old ones fail. Each scholar works for the sake of truth in his own department. He does not permit himself to consider too attentively the applicability of the truths he discovers to conditions belonging to other departments of knowledge. He may not be too regardful of the compatibility of a new fact with the preconceived ideas held by himself or by others. He will do well not to spend too much time thinking of the effect of a new fact upon the desires or the fears of the people. He must have a profound belief in the ultimate value of truth, no matter how unpalatable it may be, or how useless it may seem to those who live at the time it is found out.

Each leader in a department of a true university is both a teacher and an investigator. The really great teachers have always been investigators. The really great investigators have always been teachers, though not always, perhaps, of large groups of students, nor always, it must be admitted, in their own generation. It is highly desirable that the two faculties of teaching and discovering be combined in every university professor. There may be a place for the non-investigating teacher in a college or seminary, but he is certainly out of his sphere as the leader of a department in a university. The great investigator, on the other hand, who cannot teach students directly may profitably be housed and cared for in a university, for the sake of the contributions which he will make to knowledge, and the prestige his work will bring to the institution; but the department in which he works should also be represented by other men who can both investigate and teach. I am convinced that the influence, for any considerable length of time, of a non-investigating teacher cannot fail to be actually harmful to a student. The student may possibly acquire large stores of information, but he will not make progress in independent work, or in independent thought; indeed, his powers in this direction will be inhibited if not in time wholly obliterated. No less pernicious to the student would be the effect of an investigator whose personality is repellant and non-sympathetic, and who has little or no capacity to interest students in his subject, to inspire their enthusiasm for work, or to train them in accurate observation, sound reasoning, and vivid imagination.

If these views of what a university professor should be, hold good for the faculties of Arts, Literature, and Science — and it will, I believe, be generally conceded that they do — why should they not also obtain for the professional faculties of Law and Medicine? Surely there is need in these faculties for professors of the same high type.

It is generally taken for granted that in the philosophical faculty of a university, a professor shall give the whole of his time and all of his strength (aside from necessary recreation) to work for the university. The professor of economics does not give a part of his time to the university and the other part to the financing of city banks. The professor of mathematics would scarcely be permitted to give his forenoons to calculus, quaternions, or the teaching of "groups" in the classroom and his afternoons to the work of auditing the accounts of a transcontinental railway, or to the calculation of stresses and strains for a bridge manufacturer; nor would the university retain as its professor of chemistry one who divided his time between the university laboratory on the one hand and a factory for the preparation of aniline dyes, or a huge establishment for the manufacture of drugs in a commercial way on the other. Imagine the condition which would exist if the university said to its professor of economics "We shall be glad to have you as our professor of this subject provided you are willing to do the teaching we ask of you without direct remuneration. Your position in the university will make you so well and favorably known that you will be able to secure financial responsibilities in the city which will give you a far larger income than we could afford to pay you." Or, if the president and trustees made a proposition to the professor of chemistry that he be paid $1,500 per year to take charge of the teaching and investigation in the chemical laboratories, it being pointed out to him that the prestige of a university professorship would enable him to secure lucrative positions as commercial chemist to four or five manufacturing concerns in the city in which he lives, or as analyst to baking powder companies and manufacturers of pure food preparations, some of the trustees taking the stand that the intimate contact thus gained with chemistry as practically applied in the business world is not only desirable for the professor but absolutely essential in order that his influence upon his students may not be too academic! Which, think you, the university interests or the other interests, would get the lion's share of the time and energy of these professors, especially if they happened to have families with tastes as expensive as those of the average American family of the better class? What think you would be the rate of progress in original work in the sciences of political economy and chemistry in a university so constituted? And yet there is not a medical faculty, in a university anywhere in America, where this plan is not followed, at least for some of the chairs. In the proprietary and pseudo-university schools this arrangement holds for most of the professorships in the subjects of all four years; in the semi-university schools it obtains for most of the subjects of the last two years. The law faculties have fared somewhat better, perhaps, but I am told that the condition exists also in the majority of these. Until this is wholly changed, we can scarcely hope for the disappearance of that opprobrium which, it cannot be denied, attaches to the so-called professional faculties of our universities. Until a new régime is entered upon we must, for these faculties, fain be content with work less in quantity and poorer in quality than is consistent with the ideals and dignity of a true university.

It is the prevalent opinion that the reason the philosophical faculties of universities have been regarded as of higher standing than the professional faculties and the faculties of technical schools, is to be found entirely in that aristocratic prejudice which favors traditional "learning" and holds itself aloof from science, and especially from science as applied in professional and industrial life. I have as little sympathy as anyone with those narrow-minded academicians who believe that the only learning and the only culture worthy of the name are to be gained by a study of the ancient languages and literatures. Indeed, I unhesitatingly join hands with those who maintain that any academic training which does not include the inculcation of the "fair, faithful, and fearless spirit" of modern scientific inquiry, fails of the best purpose of education. What is more, I am convinced that a reasonable admixture of natural science studies, even if chosen from the domains of applied science, with the courses in languages, literature, history, and philosophy, will yield cultivating results of a far higher order than can be obtained where programmes from which natural science is excluded, are followed. For only through the study of the natural sciences can we escape that dominant though unwitting egoism which makes man the center of the universe. Our whole education tends too much to distort the human relation. "Man so readily deifies himself, and so gladly permits others to deify him; he occupies himself preferably with himself, with his own intellect and its products; he calls his own intellect divine, takes pleasure in worshiping his own image, and imagines that at the same time he is exhibiting a proper degree of humility." It is with great difficulty that human beings resign themselves to the scientific view of man and the universe. It is not easy, at first, as Billroth says, to admit that even the greatest human being is a mere atom compared with the totality of natural phenomena, or to hear the whole human race described as but one group of animals, active but for a relatively short time upon the earth's surface, and, in comparison with the whole universe, vanishing almost into nothing. "Man may willingly humble himself before his God, but he always values himself much higher than the whole of nature." There is a side of culture which only the study of the natural sciences can give. A sanity and a balance are derivable from them which can scarcely fail to be lacking when the so-called "humanities" only are studied.

Though it may be true that prejudice born of the old monastic influence still shackles the universities, and that there has been in the past a "discrimination among learnings," I cannot believe that it is lack of democracy *alone*, or predilection for tradition *alone*, which accounts for the slowness with which, in the first place, so-called pure science, and later the scientific professions gained recognition among the people and in the universities, or for the opprobrium that undoubtedly does attach still in many minds to the terms professional school or technical school, when compared with the school of philosophy. The cause lay much deeper. It was necessary for the professional schools and the technical schools to win their spurs. As long as natural science remained merely the desultory interest of the dilettante, as long as medicine continued to be chiefly an empirical art, and technology the passing on of rule of thumb, these subjects were not coequal with their elder sister. No people began its culture with the exact study of the natural sciences; these could come to development only after the prolonged influence of language, art, religion, law, and politics. As soon as physics, chemistry, and biology began to make the tremendous strides forward which characterized the last century, they were taken out of the medical schools and incorporated in the philosophical faculties of the universities with the happy results familiar to all.

Recently, applied science has won its place. The enormous expansion of commerce and industry has compelled the establishment of great technical schools. The old method of apprenticeship no longer suffices for the training of men. It has become necessary to save time and energy, and to make the instruction more extensive and more thorough, by education in institutions dedicated to applied science. The inventive mechanic, the engineer, and the electrician have revolutionized the world within our own memories; if we live out our threescore and ten, we may, perhaps, be permitted to witness even greater transformations. In the schools of engineering, not only are the known applications of science taught, but brilliant minds are constantly at work devising ever new and still more wonderful applications. America especially has reason to be proud of the advances she has made in technological education. A foreigner commenting upon our educational system has made the statement that, "the engineering profession is today, upon the whole, the best educated in America." The degree of Doctor of Engineering, from a good university, or institute of technology, commands full respect. I shrink from comparing it with the degree of Doctor of Medicine given by many of our universities or medical schools. The governments of Germany and Austria have made "the doctorates of engineering and of the applied sciences, and the institutions permitted to confer them, coequal with the doctorates of philosophy and their conferring universities." The head of the great German Polytechnicum has been made a Rector Magnificus, proof enough that the democracy of learning is gaining ground.[1]

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[1] *Cf.* R. H. THURSTON, "The College-Man as Leader in the World's Work," *Pop. Sci. Mo.*, New York, Vol. IX, 1902, pp. 346–359.

The way to get the highest recognition is to deserve it; the way to get rid of the opprobrium attaching to the professional schools, is to remove the cause of it. In medicine this cause is fast disappearing. Anatomy, physiology, and pathology have followed physics, chemistry, and biology into the university. Large and well equipped laboratories and libraries are devoted to these subjects. Large amounts of money have been given, so that the professors and their assistants, though as yet inadequately remunerated, are sufficiently paid to permit men who will despise certain of the delights of life and live laborious days to follow these subjects as careers. Students are taught, and important discoveries are being made in these branches. The physiologist is as fully recognized as the philologist. The men and their subjects are on an equality, not because they have been made so by edict of sovereign or ruling of university presidents, or vote of trustees, but because they really *are* so. In the best semi-university schools the departments of the first two years are now on a true university basis; not so the departments concerned with the teaching of the last two years of the course. There is no reason why internal medicine, surgery, obstetrics, and certain other branches, should not be similarly elevated; on the contrary, for the sake of people who need help in time of illness, for the sake of the medical profession, on account of our universities, and for the prestige of the science of the nation, there is every reason for that elevation. And this would speedily be brought about if universities and their benefactors fully understood the situation.

HOW CAN A SEMI-UNIVERSITY SCHOOL BE TRANSFORMED INTO A REAL UNIVERSITY SCHOOL?

By putting *all the departments*, at any rate all the principal departments, on a true university basis. To do this, several things would be necessary. In the first place, a very large sum of money would be required, for the university would have to build and equip hospitals of its own, arranged on an entirely different plan from that adopted in ordinary charity hospitals. The hospital for internal medicine would be built with the definite idea in view of teaching students and of making original researches into the nature, causes, and treatment of disease, in addition to caring for a certain number of patients. In other words, in addition to the facilities offered by any good hospital, the university hospital for medicine would have to house a *university-department* of medicine with its teaching and research laboratories. A second hospital would do the same for surgery; a third for obstetrics. Two million dollars for each of these hospitals would not be an excessive sum to make the initial installment and to endow the university department. In order to secure such a large amount of money, it is obvious that university presidents and boards of trustees must be fully convinced of its necessity, for only when this is the case will wealthy men be willing to contribute such immense amounts to the universities for this specific purpose.

If such hospitals could be obtained, and such professorships endowed, the men — professors as well as assistants — engaged to work in them should be chosen with the same care as to talents, attainments, and personality as is exercised in the choice of any other professor in the university. The men chosen should, like other university professors, give their whole time and energy to the work of the university, to teaching in the hospitals and to investigating in the hospitals. They should be men who have already made important contributions to knowledge and who are likely to continue doing so for the next twenty years. They should be well paid by the university. They should not engage in private practice, even if the university has to pay them double the ordinary salary now paid to a university professor to retain them wholly in the university work. If any patients at all, outside of the hospitals, were seen in consultation, and there is some force in the argument that the well-to-do public should, at least in some rare and difficult cases, be permitted to profit by the opinion and advice of the university professor, the fees received from them might be contributed to the budgets of the hospitals themselves, in order to remove all temptation from the staff.

The objection is sometimes raised that university professors who gave their whole time to teaching and investigating in hospitals would not come into contact in hospitals and dispensaries with the kinds of patients and the types of diseases which are met with by the practitioner in private practice, and that accordingly the student would not be taught how to deal with private patients nor how to recognize and treat the cases which he has actually to deal with later himself. This argument appears plausible until it is more closely examined. The character of hospital patients is gradually changing and the clinician who confines himself to work in hospital wards and dispensaries does actually in these latter days see many more of those people and of those varieties of complaints previously seldom seen outside of family practice. On the other hand, in a medical college in which the clinical professors engage in private practice, the students are not taken by their teachers into the homes of the patients, the private patients are not shown and the "private-practice" diseases are not demonstrated or studied in any practical way. The influence of his "private practice" may be visible, perhaps, in some special *savoir faire* manifested by the instructor in dealing with patients; too often it reveals itself in the more superficial examination of the patient, the more hurried consideration of the case, the less rigorously established diagnosis and the writing of a prescription *ut aliquid fiat*, which the exigencies of private practice are said sometimes to entail. Even if it were granted—and I, for one, am ready to grant it—that something difficultly definable but of real value to the learner emanated from the teacher who spends a large portion of his time in private practice outside of hospitals, which is lacking in the professor who gives his whole time and energies to the patients in the university hospitals and work in the laboratories of the wards, would it be comparable with the increase in scientific spirit which the student might reasonably be expected to gain from contact with a professor who, besides having the capacity for the best kind of work, has the time, energies, and opportunities to penetrate into the innermost secrets of disease in a manner precluded by the demands of private practice? If we had to give up one influence or the other, would there be any doubt as to which we could the more safely disregard?[1] But we need not be deprived of either influence, for in large cities both should be available and the students should be permitted to profit by both. It is not necessary or desirable (aside from being impossible) that a student, during the two or three years spent in clinical work in the medical school, should see all kinds of diseases, or even hear of all the symptoms or of all the methods of treatment which have been advised. It is important that he should be taught systematic methods of accurate observation and investigation, that he should learn how to get at and how to utilize the experiences of his predecessors in interpreting his findings, how to make judicious prophecies for the future from a consideration of the past, and how to plan out a rational mode of treatment. He needs thorough, conscientious drill in the fundamental methods of examination, preferably on not too large a number of patients, for a long time before he views the kaleidoscopic transformations of the "20-patients-per-hour" clinic, and is treated to imposing demonstrations in "snap-shot" medical diagnosis or spectacular amphitheater surgery. "*Routine lernt man allzuschnell.*"

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[1] A well-known professor of internal medicine, on being asked if it would not be to the advantage of his science if he gave up his private practice, and devoted himself wholly to hospital and laboratory work, replied: "I cannot afford to do without my private practice, for I learn more from it than from my hospital work." He doubtless told the truth, but the statement is a sad reflection upon the kind of hospital work that he did. A man once thoroughly employed in enthusiastic clinical investigation in well-equipped hospital wards and in laboratory experiment relating to the work of these wards,[2] imbued with that conception of experimental medicine which so deeply tinctured the minds of men like Claude Bernard and Louis Pasteur, and animated by the spirit which quickens the researches of a Paul Ehrlich, or an Elie Metschnikoff will not have time for a large private practice; he will not be able to afford so much time from his wards and his laboratories!

I would not be misunderstood in this matter. No one values perhaps more highly than I the rich and varied experience of the really great practitioner of private practice, nor is anyone more cognizant of the fact that many busy practitioners are enthusiastic, careful, thorough, methodical teachers. There is a proper place for this type of man, as well as for the university professor, in a real university school. The finding of that place is all important for the future welfare of medicine. My own opinion is that it would be a step toward evolution to a higher stage if the work of the present third year were taught by professors and instructors who give their whole time to university hospitals and those associated clinical professors and instructors who also engage in private practice taught in the last year of the medical student's course. The student at the beginning of his clinical work should be thoroughly drilled in all the methods of examination and should study a few cases laboriously, applying with strict rigor the methods he has learned; later he might more safely be permitted rapidly to widen his clinical experience by being introduced to a greater number and a greater variety of patients. Particularly in the clinical specialties must the private practitioner be retained — at any rate for a long time yet — as a teacher, for but few universities will have the endowment necessary to maintain full university chairs in clinical departments other than those of medicine, surgery, obstetrics, and perhaps psychiatry. Nor would I advocate any decrease in the number of hospitals in which private practitioners constitute the visiting staff. A hospital connection is extremely desirable for every practitioner in order that he may keep pace with progress and his private patients reap the benefits. Such opportunities should be augmented rather than diminished. But my especial plea at this time is for the addition of a small number of very costly hospitals of an entirely different kind and manned by a totally different group of men.

The great discoveries which have been made in practical medicine recently have resulted largely from the introduction of the experimental method. There is no doubt in my mind that it is to experimental medicine that we must look for the advances of the future. Had it not been for Pasteur's brilliant discoveries and the ingenious methods devised by Koch, we should not so soon have had the evolution of Lister's work into the aseptic surgery of today, nor would a disease like diphtheria, formerly so fatal, have been robbed of its terrors, through the introduction of an antitoxine. But experimentation must not be confined to those physiologists and pathologists who are not clinicians. Students entering upon the third and fourth years and finding how little the clinical professors employ the methods and principles of physiology and pathology in their daily work are but too prone to conclude that physiology and pathology are "theoretical" subjects, to be dismissed when they enter upon the "practical" work of life. What we need above all at this time are physicians and surgeons trained in physiology and pathology, who will spend a part of their time in careful observation in the wards and over the operating table; who will there collect facts which will give them ideas to be submitted to experimental test, and who, during the rest of their time, will go down into the laboratories adjacent to the wards and actually make these experiments. The men who do this must give their whole time to the university.

Will the money necessary for the introduction of research hospitals and university clinical departments be available? I believe firmly that it will, and that, too, in the very near future. How many a fond and wealthy parent, fifty years ago, would have endowed one or more great hospitals could he have saved the life of his child, dying of virulent diphtheria! The organization of an Institute for Medical Research in New York, and of a

Memorial Institute for the Investigation of Infectious Diseases in Chicago, are signs of the times. The same is true of the Institute for Experimental Therapy in Frankfort, and a number of others which I could name. The place for such institutes is in the medical faculties of the universities. Wealthy philanthropists are recognizing the value of the methods of research. There is no lack of money which could be made available for the founding of university hospitals for research and for the maintenance of true university departments of medicine, surgery, obstetrics, and psychiatry, provided those in whose hands it lies awaiting distribution can be convinced that it will be used to the best purposes.

I ask the co-operation of the alumni of this university in influencing university faculties and university presidents, the public and philanthropists, to hasten the introduction of real university medical schools in the different centers in this country. The chief cause of delay, in most institutions, lies with the university authorities. They are often more difficult to convince than are their financial benefactors. University authorities are too prone to magnify the importance of obtaining large numbers of students rather than to emphasize the desirability of an elevation of standards. They do not always recognize fully the needs of research, and are accordingly timid in their requests for money for investigation, though they are ever ready to demand money to teach more students. If this fear continues, the universities will lose the research institutions, for philanthropists will endow them as independent foundations. Above all should the means for research be afforded to the professional faculties. Poor professional faculties drag down the philosophical faculties ; adequate schools of medicine and law lend prestige to the school of philosophy. Were there any tendency to internecine jealousies among the various faculties of a university, self-interest alone should be sufficient to suppress it. That which is to the advantage of one faculty will not fail to help the others. Each faculty should vie with the others in working for the welfare of the whole university. Each faculty, therefore, will demand that all the faculties be provided with the facilities for seeking the truth according to the most rigorous methods, and independent of its apparent use or harm. The more intense the desire of the people for truth and clearness becomes, the more pressing will this demand grow.

NOTES AND COMMENTS.

THE MEDICAL STUDENT IN THE UNIVERSITY.

In the quarterly statement presented at the Winter Convocation, December 17, 1901, the President of the University made the following statement : "Some questions remain unanswered as to the relation which the new body of medical students, personally and collectively, shall sustain to the other divisions of the university."[1] This was a modified expression of the opinion held by many, that the experiment of bringing to the University campus a large body of men who had, by reason of a year's work done as a class in another institution, a certain solidarity, might possibly prove a failure, or, at best, test to the utmost the assimilating powers of the University community. This view was strengthened by the mental picture of the traditional medical student, who is represented as the freebooter of the professional schools — engaged in necessary but essentially grewsome work which could not but affect his character, and make him reckless of rights of person and property.

That this foreboding, due to the presence on the campus of 250 or 300 medical students, has proved ill-founded is due to several factors : The medical student of today is a man of very different caliber from his brother of ten or fifteen years ago, from whom he inherited his reputation. He has had a much better preliminary training. He is in a scientific environment, studying things from a lofty point of view, associated with men of high ideals and acquirements, who are devoting all their time to teaching and research work in their special branch of science. As a result he approaches the study of medicine from a higher level, and is stimulated to sober, earnest, thoughtful work.

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[1] See the UNIVERSITY RECORD, January, 1902, Vol. VI, p. 303.

Another important factor is the character of the institution itself. The atmosphere of a university is very different from that of a college. There are not the set forms of group organization, with which other groups may come into contact or conflict. The individual is all-important ; and each one finds here the opportunities for work and training that are best suited to his needs. So the medical student has found himself in contact with graduate students who were studying along the same lines for a different purpose. He has learned that various avenues to university interests are open to him as well as to the student in mathematics or history ; and he has begun to take his place and share in the social and athletic life of the university.

Under these circumstances the student in medicine has had neither time nor inclination to decorate the buildings with green paint or to abstract the hinges from the Hull gates. He has shown himself worthy of his surroundings and of the profession for which he is studying. He has proved himself a hardworking, self-respecting university citizen, and as such has won the regard and respect of the community,

REGISTRATIONS FOR MEDICAL COURSES

At the University of Chicago.

AUTUMN QUARTER, 1901.

Zoölogy.

LILLIE,	15 Comparative Anatomy of Vertebrates	13

Anatomy.

BARKER,	0 Introductory Human Anatomy	40
BARKER, KYES, LEWIS, and assistants,	4, 5, 6, Systematic Human Anatomy	248
EYCLESHYMER,	1 and 1A Histology and Cytology	37
REVELL,	3 Human Osteology	128
BARKER,	10 Advanced Work and Original Research	14

Physiology.

LOEB,	13 General and Theoretical Physiology	161
	31 Physiological Effects of Ions	2
	41 Seminar	4
	42 Research in Physiology	2
LINGLE, LYON, FISCHER,	1 Introductory Physiology	50
MATHEWS,	20A Physiological Chemistry : Special	2

Neurology.

DONALDSON AND HARDESTY,	1A Architecture of Central Nervous System	15
DONALDSON,	5 Seminar and 9, Research	9

Pathology and Bacteriology.

JORDAN,	5A Advanced Bacteriology	5
JORDAN, WELLS, WHERRY,	1A, 1B, 1C, General Bacteriology	129
HEKTOEN AND WELLS,	10 Research in Pathology	2

WINTER QUARTER, 1902.

Anatomy.

BARKER,	9 Seminar	8
BENSLEY, EYCLESHYMER,	2 Splanchnology	118
BARKER, KYES, LEWIS, BENSLEY, EYCLESHYMER and assistants,	4, 5, 6, Systematic Human Anatomy	105
BARKER, BENSLEY,	10 Advanced Work and Original Research	10

Physiology.

LOEB,	14 Physiology of the Central Nervous System	47
	32 Physiology of Space Sensations	2
	41 Seminar	2
	42 Research in Physiology	6
LINGLE,	1 Introductory Physiology	20
LYON, FISCHER,	15 Special Physiology of Mammals	3
MATHEWS and assistants,	20 Physiological Chemistry	142

Neurology.

DONALDSON,	2 Growth of Brain and Its Physiological Characteristics	4
	3 Gross and Microscopic Anatomy of Human Central Nervous System	99
	6 Seminar	5
	10 Research	3

Pathology and Bacteriology.

HEKTOEN AND WELLS,	3 General Pathology and Pathological Histology	151
HEKTOEN & WELLS,	10 Research in Pathology	13
JORDAN,	11B Bacteriology	3
JORDAN AND WHERRY,	5B Advanced Bacteriology	15

SPRING QUARTER, 1902.

Zoölogy.

LILLIE,	Elementary Embryology	163

Anatomy.

BARKER, REVELL, HARVEY,	4, 5, 6, Systematic Human Anatomy	9
BARKER,	10 Advanced Work and Original Research	1
BENSLEY,	17 Advanced Microscopic Anatomy	4

Physiology.

Loeb, 12 Physiology of Nerves and Muscles, Circulation and Respiration	107
Lyon, 15 Special Physiology of Mammals	13
Mathews, 20 Physiological Chemistry	1
Mathews, 21 Pharmacology	136

Pathology and Bacteriology.

Jordan, 2 Public Hygiene	6
Hektoen, 4 General Pathology and Pathological Histology	134
Jordan, 11C Bacteriology	3

EXPERIMENTAL MEDICINE.

If medicine intends to cure and prevent diseases, it must become primarily, and in spirit, an experimental science. As far as infectious diseases are concerned, it is needless to dwell upon this point. The rapidity with which experimental methods have led to the possibility of stamping out yellow fever and malaria, or of curing diphtheria, speaks clearly for the value of this method, especially when we compare the rapidity and certainty with which its results are obtained, with the slowness and uncertainty of the therapeutical results of other methods. There are still wide fields of medicine to which this method has, as yet, been scarcely applied. The field of nervous and mental diseases is waiting for a pioneer who shows the method by which to conquer it. Our present clinical and histological methods do little more than enable us to name the disease. As far as therapeutics is concerned, it is not the honest physician, but the quack, who claims that he is able to cure disease. It is not much better with a number of chemical maladies such as diabetes. No one can expect the understanding and cure of chemical diseases to come through any other channel that that of experimental work by adequately trained scientists.

While the necessity of experimental medicine is obvious, the basis from which the experimental data must come is possibly not so generally recognized. It does not suffice for workers in the field of experimental medicine to pay attention only to the progress in organic chemistry, but the discoveries in the field of physical chemistry are of equal, if not greater importance for medicine. To mention only one point, life phenomena are catalytic. The action of enzymes in cells is a catalytic action; it is therefore necessary that advantage be taken of the general laws of catalytic phenomena.

Experiments on single tissues and organs cannot always be conveniently carried on in mammalians or vertebrates. It is necessary that we avail ourselves of the opportunities offered in lower forms of life in studying the life phenomena of tissues. Thus it becomes necessary that, in the foundation of medicine, experimental biology receive more attention than heretofore.

Not every physician, not every medical student, should, or can, become a worker in the field of experimental medicine. This can no more be expected than that every engineer should become a productive worker in physics or chemistry. But every physician can at least be educated in the critical spirit of experimental medicine. This will enable him to intelligently follow the real progress of his science, which will be more rapid from now on than it has been in the past. It will, further, enable him to cure such diseases as can be cured, and to know the limits of his powers where no cure is possible, instead of permitting him to play games of chance with the life and health of his patients under the cover of his license.

THE COURSE IN OSTEOLOGY.

No subject in the University curriculum is better suited than osteology to the laboratory method, which, aiming beyond mere instruction, seeks also to *educate* — to draw out — the faculties of the student and to make him a trained worker, an active producer of new knowledge rather than a passive receptacle of dead, predigested facts.

The old method of teaching osteology consisted in the rehearsal of the description of the bones as given in some text-book. The popular ideal of accomplishment was the ability to recite verbatim Gray's *Anatomy*. The centers of ossification and the names of the muscles and ligaments attaching to each bone were memorized, though none of these things were present in the dried bone and were not seen by the student. In an effort to remedy this in part, many medical schools were supplied with mounted preparations of the bones with muscle attachments painted on in red and blue. "Bone-grinds" played a prominent part in the instruction; they were, however, more truly "book-grinds." The standard was the book, and as osteology, rightly enough, came early in the fixed programme of medical studies, the student was at the outset of his course impressed with the authority and importance of the text-book, its completeness, all-sufficiency, and infallibility, and the needlessness of utilizing his own powers of originality of thought and observation — indeed, throughout his undergraduate work he often remained ignorant of the existence of such powers in himself.

The study of osteology gives a knowledge of the solid framework of the body, which in its subcutaneous parts forms the chief landmarks from which most of the internal structures have to be mentally projected in the application of anatomical knowledge to the living subject. The student's knowledge is practical and valuable in proportion as his mental images are accurate and three-dimensional. Form knowledge is here paramount. It is only by *making* form that the student can fully learn form. To meet these indications modeling the bones in clay has been introduced into the laboratory course on osteology, and experience with classes ranging in size from fifteen to one hundred and fifteen has confirmed it as a regular part of the work. At the same time a certain amount of readjustment has been made of the whole subject.

Instead of requiring the student to memorize the names of the muscles and ligaments and the ossification-centers, almost all of which are mere meaningless words to him, the study of these is deferred to the time when they can be seen and learned first-hand. After dissection of the body, the student removes the muscles *seriatim*, defines and measures the areas of their attachments to the bones and makes a graphic and a written record of his findings. The ligaments are then cleaned up and learned. The detailed study of ossification-centers is relegated to the course on embryology.

In addition to making models and drawings the student writes original concise descriptions of some of the bones. The BNA nomenclature, by reason of its correctness, greater simplicity, and conciseness, is fast displacing the old terminology, but at present osteology labors under the difficulty of having to familiarize the student with a strange terminology comprising two sets of names.

In the lectures the text-book is neither recited nor superseded, but an endeavor is made to give a general view of osteology and to correlate it with other branches such as embryology and comparative anatomy.

In the laboratory each bone is studied as any natural object ought to be if a clear knowledge of it is to be obtained. Its form is reproduced in clay by building up a model which represents first the general shape and size of the bone and to which the particulars are added successively in more minute detail. A drawing is also made of the bone from two or more viewpoints and the parts labeled with the aid of a good atlas. Original descriptions are made of some of the bones. Each bone is referred to its natural position in the living body and the study of the student's own body thus begun.

In this way is secured not only the most valuable knowledge of the skeleton, but also the highest cultural values. Working in new ways stimulates anew the development of the mental faculties, this stimulation coming happily at the critical point of entrance on a new phase of life — that of the medical course. The training of the hand and eye, the clear, concise, and consecutive expression of ideas, the true place and proper use of text-books, the need and method of proper illumination to bring out surface contour, and, above all, the habit of learning things at first-hand, by direct observation, are all regarded and secured in largest measure in the modern laboratory method of teaching osteology.

The student comes to the laboratcry with little, if any, previous training in drawing and none in modeling. He usually undertakes the latter unwillingly, owing to his distrust of his ability to work in a new medium, but with very few exceptions, this difficulty soon gives place to enthusiasm. It is more difficult to get students to draw well than to model well. The reason for this is not far to seek: drawing is limited to the two dimensions of a plane surface and can only *simulate* the form of a concrete object, which has to be translated into new terms; modeling is capable of exactly reproducing the form of a solid object. Yet these two processes have much in common. Both necessitate a close study of the object, and an analysis of its form into gross and detailed features: the student must first select and represent the general form, disregarding secondary details — he must learn to see the woods in spite of the trees. Careful and repeated examinations and comparisons of the object and the representation of it (model or drawing) must be made from different viewpoints. It is in this requirement of observation and comparison that both drawing and modeling are so valuable in the laboratory. Not only do they give fuller and more lasting knowledge but they also develop and train the power of *seeing* things — for nothing is truer than the statement that "many have eyes yet see not."

THE COURSES IN PHARMACOLOGY.

Consideration of the chemical and toxic properties of drugs has long been classed under the head of materia medica. The great advance in physiological research has paved the way for more careful investigation of the physiological action of drugs on the normal animal, and the science of pharmacology has thus been built up as almost a part of physiology, although it belongs nominally under the more general head of materia medica. This careful study of drugs has been of the greatest value to therapeutics. In fact, the practical administration of drugs may be said to bear the same relation to pharmacology that technical chemistry does to theoretical chemistry.

It has long been the custom of the best universities to give the student a thorough grounding in the theory of his subject, before beginning the more detailed study of the applied science. In medicine it is well to follow the same plan. A student starts with the study of general chemistry. This leads on to organic chemistry, and more especially the chemistry of drugs, their tests and preparation. He is then familiar with the various drugs, and has a sufficient knowledge of physiology to understand their action. The important question to decide next is the best method of approaching this subject. Shall a student be given detailed directions, as in physiological chemistry, or is it better to place him in the position of an original investigator? It is well, if possible, to combine the advantages of both, as the choice of animals for experimentation naturally leads to a division of the subject. With a class of 150 men, experiments on mammals, though desirable, are almost out of the question on account of the difficulty of supervision and the lack of material. By means of carefully planned and well-directed demonstrations to smaller numbers of men it is, however, possible to teach a student as much as he could learn by following detailed description. If it were the object to train investigators this would not be sufficient, but for the illustration of important points, which help the student to remember facts such as the difference between the effects of ether and those of chloroform on the blood pressure, this method is very efficient. The advantage of experiments made according to directions are, therefore, in large part, gained by demonstrations.

In order to attain the advantages of the methods of original investigation, the student is given great liberty in his work with frogs. As the success or failure of a practitioner depends in a large measure upon careful observations and their correct interpretation, it is thought that the training thus acquired in noting the symptoms of the action of drugs and the interpretation of these symptoms will be of value in addition to the knowledge of pharmacology incidentally acquired. Supplied with a frog, a drug, and a few general directions, the student is told to localize the action of the drug. For this purpose, Claude Bernard's experiment is capable of general application. One leg is ligatured, leaving the nerve intact, and the drug is injected. If the reflexes are slowed in both legs, but the sciatics still cause the muscles to contract in both legs, the central nervous system is probably depressed. In case of a peripheral action, the ligatured leg will show a different behavior from that of the non-ligatured leg. With the same frog, the action on the heart and the circulation can also be studied. The large number of frogs thus studied necessarily show individual variations, and the student is thus taught this important lesson. By means of recitations faulty observations and the value of these variations are cleared up.

The choice of drugs is limited to twenty of the more important organic drugs, and to the careful study of inorganic substances with reference to modern developments in physical chemistry. To aid in remembering all the complicated facts of pharmacology, and in order to prevent the recording of erroneous observations, the student brings his text-book into the laboratory and reads as he works. If it occur to him to verify any of the statements in the book he is at liberty to do so, and failure to accomplish the desired result leads to discussion with his instructor. There is no way in which a student can be taught more than by thus discussing some difficulty in his work. The more recent developments in pharmacology, which have not yet been incorporated into the text-book are considered in the lectures, and their relative value pointed out.

As the course in pharmacology comes just before the student enters upon his clinical work, he is well prepared to apply intelligently the knowledge thus gained in therapeutics.

SUMMER COURSES FOR PHYSICIANS.

That portion of the Faculty of Rush Medical College which gives instruction at the University of Chicago has made especial arrangements for conducting advanced courses for physicians during the Summer Quarter, from June 18 to about August 1. It has seemed desirable that opportunities should be given to practitioners who have been doing general work, to undertake courses which will lead them into special branches. Thus courses in the anatomy, physiology, and pathology of the various special systems have been made available. Physicians wishing to undertake the practice of otology, gynecology, or ophthalmology, will find in the announcements of the Summer Quarter, descriptions of courses which will form the most suitable introduction to the study of these specialties. In addition, provision has been made for physicians who were graduated at a time when certain of the subjects, now quite elaborately treated in the regular medical curriculum, were either not taught at all or were very superficially treated. We refer especially to the courses in bacteriology, splanchnology, pathological histology, and experimental pharmacology. It is believed that an increasing number of physicians may desire to spend the five or six weeks set aside for these courses in the pleasant environment of the University of Chicago.

THE UNIVERSITY OF CHICAGO MEDICAL CLUB.

By a vote of the Board of Medical Affairs of the University of Chicago, in the autumn of 1901, it was decided to form a medical society to hold fortnightly meetings in one of the laboratories, at which papers might be read representing the original investigations carried on in the various departments of the natural sciences. At the first meeting Professor Donaldson was elected president, and Dr. Kyes secretary and treasurer.

The society has met on alternate Monday evenings in the Hull Laboratory of Physiology, and since its inception, the following papers have been presented:

1. *The Influence of Valency, and Possibly of the Electrical Charge of Ions, upon Their Antitoxic Effects.* Professor Loeb.
2. *Myosis in Man.* Dr. Peacock.
3. *Mirror Writing.* Dr. Sidney Kuh.
4. *The Law of the Innervation of the Frog's Leg.* Professor Donaldson.
5. *Experiments on the Effect of Lack of Oxygen on the Fertilized Eggs of the Sea Urchin.* Assistant Professor Lyon.
6. *Chemical Stimulation of Nerves.* Assistant Professor Mathews.
7. *The Formation of the Embryo of Necturus.* Dr. Eycleshymer.
8. *A New Theory of Fermentation.* Professor Nef.
9. *The Chicago Drainage Canal.* Associate Professor Jordan.
10. *Further Experiments on Artificial Parthenogenesis in Annelids.* Dr. Fischer.
11. *The Number and Size of the Spinal Ganglion Cells and Dorsal Root Fibers in the White Rat at Different Ages.* Mr. Hatai.
12. *The Physiological Action of Formaldehyde.* Dr. Koch.
13. *Fragmentation and Segmentation of the Myocardium.* Professor Hektoen.
14. *Differentiation without Cleavage in the Annelid Egg.* Assistant Professor Lillie.
15. *The Analogy between Loss of Water and Lowering of Temperature in Living Tissues.* Mr. Greeley.
16. *An Unknown Diplococcus with Unusual Pathogenic Action.* Dr. Wells.
17. *A Quantitative Study of Variations in Scallops.* Associate Professor Davenport.
18. *Bone Cyst of the Middle Turbinated Body.* Dr. Shambaugh.
19. *The Influence of Osmotic Pressure upon the Plant Cell.* Dr. Livingston.
20. *The Effect of Ions upon the Absorption of Water by Muscle.* Dr.R. W. Webster.

THE EFFECT OF CLINICAL TEACHING ON THE STAFF.

In conducting short practical courses there are, obviously, two factors to be considered, the patient and the student. It appears, however, that certain principles, carefully observed, redound to the benefit of both parties, and, as a little experience soon shows, just as much to the benefit of the teacher. For, in order to do justice to the charge he has accepted, the latter must be, first of all, systematic. The wealth of clinical material forces him to examine carefully what his clinic offers, so that he may present to his students cases of progressively greater difficulty in examination, diagnosis, medicinal and operative treatment, etc. In other words, he must — mentally, at least — catalogue the questions and problems which he has at his disposal. He must further be prepared to render account to his students of his own findings and opinions — an ever-present incentive to become better acquainted with the details of his patient's condition. And while it is said that one observes most minutely when one is to draw a picture of what is to be seen, the same holds good when a graphic portrayal is demanded.

Our students of today are, moreover, well prepared by previous intellectual training to think logically and independently. A simple statement, be it ever so sincerely and firmly made, will not suffice if it cannot be supported by scientific data and deductions. If it conflicts with the medical and surgical creed with which undergraduate students are and should be fortified before exposing themselves to the doubts and tribulations of everyday practice, the teacher may find it necessary to revise the routine conceptions of his work. It is rather distracting at times, but ever most stimulating. One has recourse to somewhat neglected old-time friends, anatomy, histology, pathology, etc. Again and again enthusiastic and interested students are encouraged to take an appeal to the laboratory, as a higher court, rather than to a judgment based upon personal clinical observation.

Association with more instructors in allied branches of medicine — especially intimate acquaintance arising from informal conferences concerning concrete cases or symptoms, and from personal intercourse for a number of weeks —

make the student discriminating, less apt to swear by the words of any one "master." And the latter himself will gladly and naturally practice what he preaches when his audience is critically attentive and alert. To insist, invariably, for instance, upon asepsis and upon gentleness in the treatment of our—sometimes not over-cleanly or too amiable—patients, becomes manifestly absurd, when the instructor himself sins against these just and humane demands. In fact, strict adherence to certain simple and well-defined rules proves to be indispensable if the short time of instruction is to be thoroughly utilized; it is necessary to be both brief and accurate, while avoiding the danger of becoming positive and epigrammatic. And medical philosophers assert that in medicine one should not use the words "never" and "always."

THE ATTITUDE OF PATIENTS TOWARD CLINICAL TEACHING.

During the last year the question whether patients in charitable institutions should be utilized for the purpose of clinical instruction has been discussed freely by physicians and others interested in educational and charitable matters. The patient himself, however, has not been heard and his answer to the question at hand will therefore be of some interest. In one of our larger dispensaries a test has been made under conditions which closely approach those of a scientific experiment. The institution had existed so long that the number of those cared for showed only such slight variations as the changing seasons and the gradual increase in our population would naturally cause. No change of any kind that could influence the attendance was made except that students were admitted to some of the clinics. The patients were not influenced in any way—they were at liberty to choose physicians who gave instruction or those who did not demonstrate their cases. It was thought probable that, for a short time at least, the attendance in the clinics of the first of these two groups would somewhat decrease, that prejudice and the dread of the new would keep away some; but it seemed equally probable that the patients would speedily learn that clinical demonstration was in many ways of great advantage to them, and that the deserters would return to the place where for years they had sought relief from their ailments. In one respect these expectations were not fulfilled—the initial decrease did not occur. From the beginning those most vitally interested seemed to have accepted the innovation with enthusiasm. In many of the departments to which students are not admitted the work has grown lighter, while in those in which clinical instruction is given there has been a marked increase, amounting in some instances to over 50 per cent. of the attendance. Seeing that from the date when students began to attend one of our dispensary clinics its records show an annual increase from 1963 consultations to 3224, there can no longer be doubt as to the attitude of patients toward clinical instruction.

COURTESY TO CLINICAL PATIENTS.

It seems to the writer that there is a growing tendency, especially among the younger medical teachers, to a less courteous and considerate treatment of clinical patients than in former years. This may be attributed, in part, to the influence of certain foreign clinicians, whose custom is to treat the individual presented in the clinic as an impersonal, inanimate "case." Forgetfulness of the fact that every patient is a sentient, sensitive human being is at no time or place justifiable; but, whatever may be said of such an attitude in a monarchical country, where caste lines are sharply drawn, it is certain that it will not be tolerated in our free democracy, where every person feels himself entitled to equal rights with and to the same consideration as any other.

This lack of consideration manifests itself in the harsh, dictatorial manner of the clinician; in the unnecessary exposure of the person, as where patients are presented wholly nude where the uncovering of one part of the body at a time would suffice; in the infliction of unnecessary pain, by a rough and hasty examination, and in various other ways.

If adequate clinical material is to be available for the teaching of our large number of students by modern methods, where the students are brought, singly or in small groups, directly in contact with the patient, it will be necessary to utilize the patients in many hospitals not now open to clinical teaching, and, possibly, even private patients. This can be accomplished with little difficulty if the public can be convinced of the fact, already established among medical men, that no patients receive such thorough, exhaustive examination, or such painstaking diagnosis and treatment as those who are made the subjects of clinical demonstration. Few patients, charity or private, object to such demonstration, if it be courteously and carefully conducted, and if it be made clear to them that they are rendering a great service to the clinician, the student, and to all patients afflicted like themselves, who may subsequently come under the care of these gentlemen,

It is certain, however, that nothing will militate more certainly and effectively against this desirable end than a discourteous, ungentlemanly demeanor toward the patient by the teacher or his students. A kindly, courteous manner, uniformly displayed to all patients, of whatever station in life, is often as important a factor in developing a clinic as is the medical knowledge and skill which are exercised, just as it is in the building up of a private practice. Patients return willingly and gladly to such a clinic, and they influence their sick friends to lay aside their prejudices and submit to clinical demonstration. They are especially likely to do this if it is made clear to them that they are rendering an important service to the physician, the student, and the public, by allowing their cases to be demonstrated and studied in the clinic.

The courteous treatment of patients is of the utmost importance to the student, as inculcating the proper method to be adopted by him in his professional life. Example is more potent than precept, and the example set before the student by his clinical teachers more than all else determines his own methods and behavior in his later career. And, finally, it is of importance to the clinician himself that his demeanor toward his clinical patients be the same as he would adopt toward his private patients. True courtesy can never be born of self-interest, and the physician whose manner is domineering, harsh, and inconsiderate in his clinic, and affects to be gentlemanly only to his wealthy private patients, is certain, sooner or later, to reveal the perfunctory, artificial character of his courtesy in his private practice. For the best interests of the clinic, the student, and the clinician, the courteous treatment of patients is alike demanded.

Should undergraduate students be taken or sent into the large wards of the hospital? This is the custom in many foreign schools, and has been practiced to some extent in this country. The plan is neither essential nor advantageous, and the abuses which are almost certain to develop in connection with it have done much to prejudice hospital authorities against clinical teaching. It may be safely asserted that no undergraduate student should ever be allowed to examine patients in a ward in the absence of an instructor. He is sure to fall into errors of method in examination, in diagnosis, and in his demeanor toward the patient. It is a far better plan to have one, sometimes two or three patients, conveyed to an examining room, almost always available in close proximity to the ward, where he can be examined by the students, singly or in small groups, or demonstrated to the class by the instructor. The conditions there present, away from the noise and other distractions of the large ward, are much more favorable to careful, thorough examination, and one avoids thereby the disturbance of the other patients in the ward. The patient who is too ill to be removed to the examining room in a suitable wheeled bed or cot, is, with rare exceptions, too ill for clinical examination or demonstration.

The matters which have been dealt with in this article are of vital importance just at this time, when the need of extension of our clinical facilities is so pressing. Every teacher and every student should be impressed with the fact that the ease or difficulty with which we may secure for clinical purposes the use of hospitals now closed to us will depend, more than all else, in the long run, on the kindly, courteous treatment which is accorded to the sick who lend themselves for this purpose. The helpless pauper is entitled to exactly the same consideration, and should receive the same gentlemanly treatment, that is accorded to the most influential and wealthy patient in private practice.

THE WEST SIDE DISPENSARY
of the United Hebrew Charities.
Extra-Mural Courses.

The West Side Dispensary of the United Hebrew Charities occupies a new building on Morgan street, near Maxwell. It is a large, commodious two-story structure, with modern equipment.

During the last year, closing May 11, 1902, 26,840 patients were treated, showing an increase of 6,317 patients over the previous year. Instruction is given daily throughout the year at the dispensary in medicine, neurology, ophthalmology, surgery, diseases of the ear, nose, and throat, and diseases of children. The classes in each subject are limited to eight or ten students. The work is so arranged that students who elect these classes may devote one afternoon, from 2:00–6:00 P.M., to work in the dispensary. The instructor gives a course of instruction twice a week, for a period of six weeks. The instruction is conducted on the plan of bedside teaching. A student is assigned a case and is given a blank history-form and asked to make a complete record. He makes a careful examination of his patient and makes his report at the end of half an hour or more. He reads the history of the case, presents his physical findings, and offers a diagnosis. The instructor asks the student to defend his diagnosis. The case is examined in the presence of the entire class under the guidance of the instructor. The diagnosis is either corroborated or a new one is made, and such points of interest are discussed as have a bearing on the etiology, pathology, diagnosis, or treatment of the case in question.

An important addition to the usefulness of the dispensary has been the establishment of a clinical laboratory during the past year. This laboratory is thoroughly equipped for microscopical and chemical analyses, and the students have opportunity to make examinations of the blood, sputum, urine, bacteriological specimens, etc., in connection with their clinical work.

THE PRESBYTERIAN HOSPITAL
of the City of Chicago.

The charter of the Presbyterian Hospital of the city of Chicago was dated July 21, 1883, and consisted of a board of twenty-eight members, the names being as follows: Tuthill King, Daniel K. Pearsons, William Blair, Robert C. Hamill, John H. Barrows, C. M. Henderson, John B. Drake, Nathan Corwith, Samuel M. Moore, Henry W. King, W. H. Wells, Henry Waller, Henry M. Lyman, James M. Horton, Willis G. Craig, Cyrus H. McCormick, Jacob Beidler, Joseph P. Ross. Of this number only three are living; namely, Dr. Daniel K. Pearsons, Dr. Henry M. Lyman, and the Rev. Willis G. Craig.

Since the above date, and up to the present fiscal year ending March 31 last, there have been treated in this institution 29,971 patients. Two thousand five hundred and seventy-seven were treated last year, or an increase of 114 over the record of any year previous. The total days of treatment for last year was 71,278. Twenty-two thousand were full pay patients, 28,000 part pay, and 20,000 absolutely free. The institution maintains a daily average of sixty-five free beds the year around. This outlay is met by endowments, revenue from private patients, and material aid from the Ladies' Aid Society connected with this institution. One hundred and one patients were transferred last year from the pay list to the free list. Five hundred and seventy-seven dressings were given to patients who were unable to pay for the same, this referring to those who had left the hospital for their convalescence. Fifty-one per cent. of patients were free and part pay, 49 per cent. only paying for full care.

On February 1 last this institution opened its doors to the treatment of minor contagious diseases for the purpose of scientific research, in the hope of finding some better method for the treatment of minor contagion. It has treated up to date fifty-two cases of scarlet fever, all recovering without complications save one. Means were provided for this purpose by Mr. and Mrs. Harold F. McCormick, and the institution is known as the Memorial Institute. The fact that this hospital was the first to take up this work must have its influence upon the public, especially when considering the fact that contagious diseases cause such ravages among children.

The purpose of the institution is to care for the sick in the sense of a general hospital; namely, medical, surgical, gynecological cases, and the special branches.

Cases are admitted without reference to age, creed, sex, or color. No proper free cases have been refused during the past two years, while private patients have been referred elsewhere repeatedly, owing to lack of room. Cots have been in the wards most of the time for many months, which emphasizes the fact of the great necessity for larger accommodations.

The Board of Managers deeply regret the death of the Rev. Dr. William C. Gray, and the Medical Staff that of the illustrious Dr. Christian Fenger, both deaths occurring during the past year.

By the munificence of the various friends of the institution recreation grounds have been provided for, and the same are also used by the hospital corps for various games.

The Ladies' Aid Society has, in addition to furnishing all the linen, furniture, and table-ware required, placed several trees on the grounds facing two sides of the hospital.

The humane and scientific work of the institution are always kept in mind, and nothing is left undone which will aid both the patient and the profession in every way possible.

FRANCIS M. NESMITH, *Supt.*

RECENT PUBLICATIONS, BY THE MEMBERS OF THE FACULTY OF RUSH MEDICAL COLLEGE,

DURING THE YEAR, JULY 1, 1901—JUNE 30, 1902.

NAME.	TITLE.	WHERE PUBLISHED.
LEWELLYS F. BARKER	Translation of Spalteholz's *Hand Atlas of Human Anatomy*, Vol. II.	Leipzig, 1901.
	Histology of the Brain.	Wood's *Reference Handbook of Medical Sciences*, N. Y., 1901.
	On the Profession of Nursing and its Future.	Rept. of the "Proc. of First Graduating Exercises of the Graduates Lakeside Hospital School for Nurses," Cleveland, 1901.
	The Unveiling of the Cell.	*Journal American Medical Association*, March 1, 1902.
	On the Clinical Aspects of Plague.	*American Journal of the Medical Sciences*, October, 1901.
	Medicine and Universities.	*American Medicine*, Philadelphia, 1902.
H. H. DONALDSON	Growth of the Brain.	Wood's *Reference Handbook of the Medical Sciences*, Vol. II, 1901.

Name.	Title.	Where Published.
H. H. DONALDSON	Review of *Atlas of Nervous System*, C. Jacob. Preface by A. Strümpell.	*Psychol. Review*, Vol. III, No. 6, November, 1901.
	On the Formula for Determining the Weight of the Central Nervous System of the Frog, from the Weight and Length of its Entire Body.	
H. H. DONALDSON AND D. M. SCHOEMAKER	Observations on the Post Mortem Absorption of Water by the Spinal Cord of the Frog (*Rana Virescens*).	*Jour. Comp. Neurology*, 1902.
C. M. CHILD	Regulation in Stenostoma.	*Science*, N. S., Vol. XIV, No. 340, July 5, 1901.
	Fission and Regulation in Stenostoma Leucops.	*Biological Bulletin*, Vol. II, No. 6, 1901.
	The Habits and Natural History of Stichoslemma.	*Amer. Naturalist*, Vol. XXXV, No. 420, December, 1901.
	An Experimental Study of Regulation in Stenostoma.	*Science*, N. S., Vol. XV, No. 379, April 4, 1902.
	Abnormalities in the Cestode Moniezia Expansa, III.	*Biological Bulletin*.
	Studies on Regulation, I. The Regulation of Pieces and Zoöids in Stenostoma.	*Archiv für Entwickelungsmechanik*.
C. M. CHILD AND A. N. YOUNG	Regeneration of the Appendages of Nymphs of the Agnonidæ.	*Archiv für Entwickelungsmechanik*.
ELIAS P. LYON	Effects of Potassium Cyanide and of Lack of Oxygen upon the Fertilized Eggs and the Embryos of the Sea Urchin (*Arbacia Punctulata*).	*American Journal of Physiology*, Vol. VIII, April, 1902.
FRANK R. LILLIE	The Organization of the Egg of Unio, Based on a Study of its Maturation, Fertilization, and Cleavage.	*Journal of Morphology*, Vol. XVII, 1901.
	Notes on Regeneration and Regulation in Planarians.	*American Journal of Physiology*, Vol. VI, No. 2, October 1, 1901.
	Differentiation without Cleavage in the Egg of the Annelid Chætopterus Pirgamentaceus.	*Archiv für Entwickelungsmechanik*.
D. J. LINGLE	Importance of Sodium Chloride in Heart Beat.	*American Journal of Physiology*, 1902.
ALBERT P. MATHEWS	Action of Atropine and Pilocarpine on the Embryos of the Starfish and the Sea Urchin.	*Ibid.*, Vol. VI, December 1, 1901.
	The So-Called Cross-Fertilization of Asterias and Arbacia.	*Ibid.*, Vol. VI, 1901.
	Artificial Parthenogenesis by Mechanical Agitation.	*Ibid.*, Vol. VI, 1901.
	The Nature of Nerve Stimulation and of Changes in Irritability.	*Science*, N. S., Vol. XV, No. 378, 1902.
	The Nature of the Nerve Impulse.	*Century Magazine*, March, 1902.
WALTER S. HAINES	Revision of Purdy's *Urinalysis*.	Philadelphia, Davis Co., 1901.

Name.	Title,	Where Published.
Jerome H. Salisbury	Prevalent Mistakes in Regard to Diseases of the Stomach.	The *Chicago Clinic*, February, 1902.
	The Recognition of Butyric Acid in Stomach Contents.	*Medicine*, February, 1902.
J. Stieglitz	On Positive and Negative Halogen Ions.	*Journal of American Chemical Society*, Vol. XXIII, 1901.
	Review of *Physical Chemistry*, by H. C. Jones, Professor of Physical Chemistry, Johns Hopkins University.	*Ibid.*, Vol. XXIV, June, 1902.
Felix Lengfeld	On Gold Halides.	*American Chemical Journal*, Vol. XXVI, p. 324.
	A New Proof of the Formula $d = \frac{02T^2}{L}$.	*Journal of Physical Chemistry*, Vol. V, p. 499.
	Some Applications to Chemistry of J. J. Thomson's Work on the Structure of the Atom.	*Ibid.*, Vol. V, pp. 639–642.
Felix Lengfeld and James H. Ransom	The Influence of Electrical Waves on Chemical Action.	*Ibid.*, Vol. V, p. 502.
J. U. Nef	Dissociationsvorgänge bei den Alkyläthern der Salpetersäure, der Schwefelsäure und der Halogenwasserstoffsäuren [Zweite Abhandlung].	*Liebig's Annalen der Chemie*, Vol. 318, pp. 1–57.
	Dissociationsvorgänge bei den einatomigen Alkoholen, Aethern und Salzen.	*Ibid.*, Vol. 318, pp. 137–230.
John C. Hessler	The Essentials of Chemistry.	B. H. Sanborn & Co., Boston, Mass., 1901.
H. C. Biddle	The Deposition of Copper by Solutions of Ferrous Salts.	*Journal of Geology*, 1901, and *American Chemical Journal*, October, 1901.
Alexander Smith	The Influence of Varying Temperature and Pressure on the Vapor Density of Calomel.	"Decennial Volumes of the University of Chicago."
	Amorphous Sulphur and its Relations to the Freezing Point of Liquid Sulphur.	*Proceedings of the Royal Society of Edinburgh*, June 2, 1902.
Alexander Smith and E. H. Hall	The Teachings of Chemistry and Physics.	Longmans, Green & Co., New York, 1902.
Ludvig Hektoen	Section on Pathology.	*Progressive Medicine*, March, 1902. Philadelphia: Lea Bros. & Co.
	Actinomycosis of Respiratory Tract.	*International Clinics*, Vol. II, 1901.
	The Extension of Aortic Aneurysms into and between the Walls of the Heart and Dissecting Aneurysms of the Heart.	*Transactions Association of American Physicians*, 1901, also *American Journal of Medical Sciences*, 1901.
	"Chairman's Address," Section on Pathology, St. Paul Meeting American Medical Association, June, 1901.	*Journal American Medical Association*, 1901.
	Absorption and Incrustation of Elastic Fibers in Giant Cells.	*Journal of Medical Research*, Vol. VII, 1901.
	Experimental Bacillary Cirrhosis of the Liver.	*Journal of Pathology and Bacteriology*, Vol. VII, 1901.

Name.	Title.	Where Published.
Ludvig Hektoen	American Text-Book on Pathology. One of the editors and contributor of sections on "General Pathological Processes," "Diseases of the Ductless Glands," "Diseases of Bones and Joints."	W. B. Saunders & Co., Philadelphia, 1901.
E. R. Le Count	Report of a Case in Which There Were Two Parietal Dissecting Aneurysms (Vestberg) in the Same Heart.	*Transactions of the Chicago Pathological Society*, Vol. IV, p. 126, 1899–1901.
	Report of a Case of Diffuse Infiltrating Sarcoma of the Liver, with Widely Scattered Metastatic Tumors, Secondary to a Sarcoma of the Eye.	*Ibid.*, p. 165.
	Demonstration of Metastatic Tumors of Peritoneum following a Papillary Carcinoma of the Fallopian Tube.	*Ibid.*, p. 264.
	Tracheo - Bronchial Fibrinous Cast.	*Ibid.*, 1902, Vol. V, p. 10.
	Report of a Case of Malignant Hypernephroma, with Metastatic Growths in the Bones and Two Spontaneous Fractures of the Femur.	*Ibid.*, p. 82.
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	Granulation Tissue.	*Reference Handbook of Medical Sciences*, Wood & Co., New York, 1902, p. 410.
George H. Weaver	Translating and editing Lehmann and Neuman's *Atlas of Bacteriology*.	
H. G. Wells	Multiple Primary Malignant Tumors; Report of a Primary Sarco-Carcinoma in the Thyroid of a Dog, with mixed Sarcomatous and Carcinomatous Metastases.	*Journal of Pathology and Bacteriology*, 1901, p. 357.
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	Reversibility of Enzymes. Its Application in Physiology and Pathology.	*Journal of the American Medical Association*, 1902, Vol. XXXVIII, p. 220.
H. T. Ricketts	Oidiomycosis (Blastomycosis) of the Skin and its Fungi.	*Journal of Medical Research*, 1902, Vol. VI.
Peter Bassoe	Report of a Case of Gangrenous Pancreatitis and Disseminated Fat Necrosis.	*Transactions of Chicago Pathological Society*, 1902.
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NAME.	TITLE.	WHERE PUBLISHED.
E. C. ROSENOW	On the Association of Stone and Tumor of the Urinary Bladder.	*American Journal of Medical Sciences*, April, 1902.
E. O. JORDAN	The Relative Abundance of Bacillus Coli Communis in River Water as an Index of Self-Purification of Streams.	*Journal of Hygiene*, Vol. I, No. 3, pp. 295–320, 1901.
	Notes of the Occurrence and Habitat of Anopheles punctipennis and Anopheles maculipennis in the Valley of the Androscoggin.	*Journal of Medical Research*, Vol. VII, No. 1 (N. S. II, No. 1), pp. 1–24, January, 1902.
	Review of Migula's A. de Bary's *Vorlesungen über Bakterien*.	*Science*, July 12, 1901, Vol. XIV, p. 65.
	Review of Frost's *A Laboratory Guide in Elementary Bacteriology*.	*Ibid.*, July 12, 1901, Vol. XIV, p. 65.
	The Soluble Ferments or Enzymes.	*Popular Science Monthly*, September, 1901, pp. 497–503.
MARTIN H. FISCHER	The Problems of Physiology and Pathology.	*Medical News* (New York), September 28, 1901.
	The Effects of Formalin upon Tuberculous Guinea Pigs.	*Transactions Chicago Pathological Society*, Vol. V, p. 61, 1902.
	Further Experiments on Artificial Parthenogenesis in Annelids.	*American Journal of Physiology*, June, 1902.
	The Relation of Physical Chemistry to Pharmacology.	Chapter in George F. Butler's *Materia Medica, Therapeutics, and Pharmacology*. W. B. Saunders & Co., 1902. (In press.)
	Physical Chemistry for Physicians and Biologists. A translation of Ernst Cohen's *Vorträge für Aerzte über Physikalische Chemie*.	Henry Holt & Co., 1902. (In press.)
L. M. LOEB	Two Cases of Emphysematous Gangrene, Caused by Bacillus Aërogenes Capsulatus.	*American Medicine*, July 27, 1901.
FRANK BILLINGS	General Medicine.	*Practical Medical Series*, Vol. I, October, 1901. The *Year Book* Publishers, Chicago.
	A Case of Carcinoma of the Pancreas, with Report of the Autopsy.	*Chicago Pathological Society Transactions*, January, 1902.
	The Symptoms of the Early Stage of Cirrhosis of the Liver.	*Association of American Physicians*, April 29, 1902.
	Stokes-Adams Syndrome, with Report of Cases.	*Illinois State Medical Society*, May 21, 1902.
	General Medicine.	*Practical Medical Series*, Vol. II, 1902. The *Year Book* Publishers, Chicago.
	The Spinal Cord Changes in Pernicious Anemia.	The *Shattuck* Lecture, Massachusetts State Medical Society, Boston, June 10, 1902.
JOHN M. DODSON	The Etiology of Hodgkin's Disease.	*Pædiatrics*, March, 1902.
	The Importance of Accurate Records and Credits of the Student's Work.	*Bulletin of the American Academy of Medicine*, October, 1901.
DANIEL R. BROWER	Manual of Insanity.	Published by Saunders & Co., 1901.

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	Some Suggestions for the Better Care of the Insane.	*Illinois Medical Journal*, January, 1902.
	A Neurological Clinic.	The *Medical Standard*, February, 1902.
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	Some Observations on Treatment of Acute Insanity in General Hospitals.	*Proceedings of American Medical Psychological Association*, 1902.
Alfred C. Cotton	Environment of the Medical Examiner.	The *Medical Examiner and Practitioner*, Vol. XII, No. 3.
	Degenerative Bulbar Paralysis.	*Pediatrics*, Vol. XIII, No. 2.
	Infant Clothing.	*Illinois Medical Journal*.
Harold N. Moyer	The Relation of the Medical Editor to Original Communications.	*Medical Fortnightly*, August 26, 1901.
	Arterio-Sclerosis.	*Medicine*, October, 1901.
	An Anomalous Form of Tabes	*Ibid.*, November, 1901.
	The Psychoses of Chorea.	*Journal of the American Medical Association*, November 23, 1901.
	Treatment of Neurasthenia.	*Journal of the American Medical Association*, December 21, 1901.
S. R. Slaymaker	The Etiology of Goiter.	The *Clinical Review*, February, 1902.
Thos. R. Crowder	Hyperplastic Tuberculosis of the Vermiform Appendix.	*American Journal of Medical Sciences*, 1902.
Sydney Kuh	Treatment of Acromegaly with Pituitary Bodies.	The *Journal of the American Medical Association*, February 1, 1902.
	Mirror-Writing and the Inverted Image.	*Ibid.*, November 23, 1901.
	Symptomatology, Diagnosis, and Differential Diagnosis of Neuritis.	*American Medicine.*
I. A. Abt	A Case of Multiple Gangrene Complications — Typhoid Fever.	The *Journal of the American Medical Association*, Aug. 17, 1901.
	Hepatic Cirrhosis — Congenital Idiocy — Sporadic Cretinism.	The *Clinical Review*, August, 1901.
	Pathological Specimens of: Epidemic Cerebro-Spinal Meningitis; Meningeal Hemorrhage; Intussusception; Diaphragmatic Hernia.	*Pediatrics*, Vol. XIII, No. 4, 1902.
J. Clarence Webster	The Question of Ovarian Gestation.	*Transactions of the Chicago Pathological Society*, Vol. V, No. 1.
	The Treatment of Rawed Peritoneal Surfaces in Abdominal Operations.	The *Chicago Medical Recorder*, December, 1901.
	A Satisfactory Operation for Certain Cases of Retroversion of the Uterus.	The *Journal of the American Medical Association*, October 5, 1901.
	The Method of Incision in Colpotomy.	*American Gynæcological and Obstetrical Journal*, December, 1901.

Name.	Title.	Where Published.
J. Clarence Webster	Two Specimens of Placenta Prævia.	The *Journal of Obstetrics and Gynecology of the British Empire*, March, 1902.
	Valvular Heart Disease in Relation to Pregnancy and Labor.	*Medicine*, February, 1902.
	An Improved Method of Examination of the Female Bladder.	The *Journal of the American Medical Association*, May 17, 1902.
	The Practice of Obstetrics.	Edited by Charles Jewett. Second edition, 1901. (Joint Author.)
	Text-Book of Obstetrics.	Edited by R. C. Norris. Second edition, 1902. (Joint Author.)
Rudolph Wieser Holmes	Ablatio Placentæ — A study based upon two hundred cases in the literature. (Illustrations.)	*American Journal of Obstetrics*, Vol. XLIV, No. 6, December, 1901.
	The High Retraction Ring as a Contraindication to Version.	The *Chicago Medical Recorder*, Vol. XXII, No. 2, February, 1902.
	A New Method of Tamponing the Uterus post partum. (A new instrument.)	*American Journal of Obstetrics*, Vol. XLV, No. 2, February, 1902.
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	The Conduct of the Third Stage of Labor.	*Chicago Medical Recorder*, July, 1902.
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	Hyperplastic Glandular Endometritis.	*American Journal of Obstetrics*, Vol. XLIV, No. 3, 1901.
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